

Update on DCR Land Acquisition

Water Supply Citizen's Advisory Committee March 19, 2012

Presented by
Jonathan Yeo
Director, Division of Water Supply Protection



DWSP Mission Statement

“To utilize and conserve water and other natural resources to protect, preserve and enhance the environment of the Commonwealth and to assure the availability of pure water for future generations”

Why Land Acquisition?

“ The management and maintenance of watershed lands in a natural condition is paramount to the continuous supply of pure water. The finest drinking waters in the world are a product of the natural filtering processes of a forested landscape. The replication of these natural processes using infrastructure-based treatment and filtration is inferior to, and more expensive than, the incomparable benefits derived from watershed land protection.”

- *DWSP Land Acquisition Strategy document*



Watershed Protection Planning



4 overarching concepts guiding DWSP watershed management:

1. **Protect the most sensitive areas of the watershed through ownership or agreements with land owners.**
2. Manage DWSP-owned properties to protect water quality and provide stewardship of natural resources.
3. Work with watershed communities to protect water resources while accommodating community needs.
4. Monitor to identify potential or existing water quality problems.

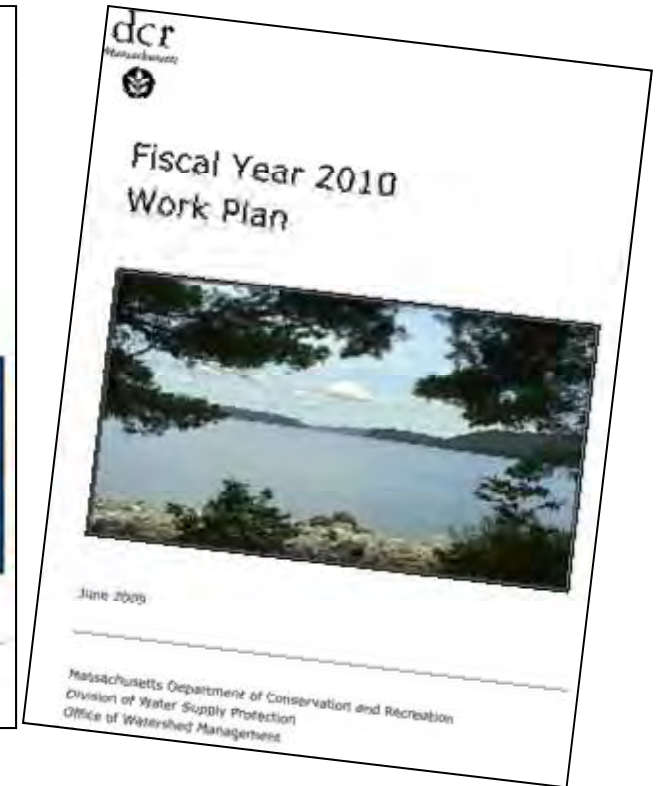
Land Procurement and Land Preservation Programs are major control program for 8 out of the 12 identified sources of pollutants to the watershed system.

Source	Control Program or Measure												
	Land Procurement	Land Preservation	Land Management	Wildlife Management	Public Access Management	Watershed Security	Infrastructure	Watershed Protection Act	Technical Assistance & Community Outreach	Interpretive Services	Water Quality Monitoring	Environmental Quality Assessment	Emergency Response
Wildlife			•	•	•						•	•	
Public Access/ Recreation			•	•	•	•				•	•	•	
Timber Harvesting			•				•				•	•	•
Wastewater	•	•						•		•	•	•	
Roadways/ Railways/ ROWs											•	•	•
Agriculture	•	•						•	•		•	•	
Construction	•	•						•	•		•	•	
Commercial, Industrial, and Governmental Sites	•	•						•	•	•	•	•	•
Residential Sites	•	•						•	•	•	•	•	
Solid Waste Facilities	•	•						•	•	•	•	•	
Future Growth	•	•	•	•	•			•	•	•	•	•	
Climate Change	•	•									•	•	•



Annual Work Plans

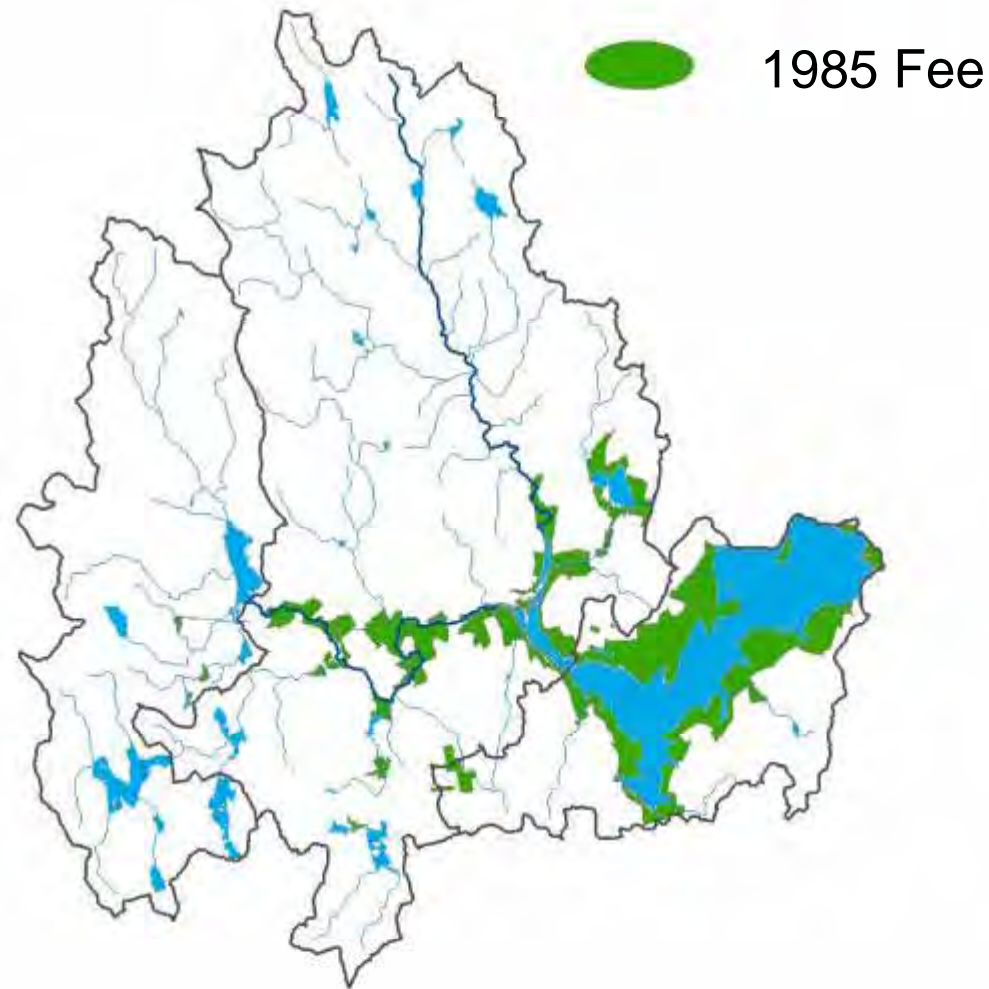
Tasks related to the ***Land Procurement*** and ***Land Preservation (Watershed Preservation Restrictions)*** are identified in the Annual Work Plans.



The Beginning – 1980s

Wachusett Watershed

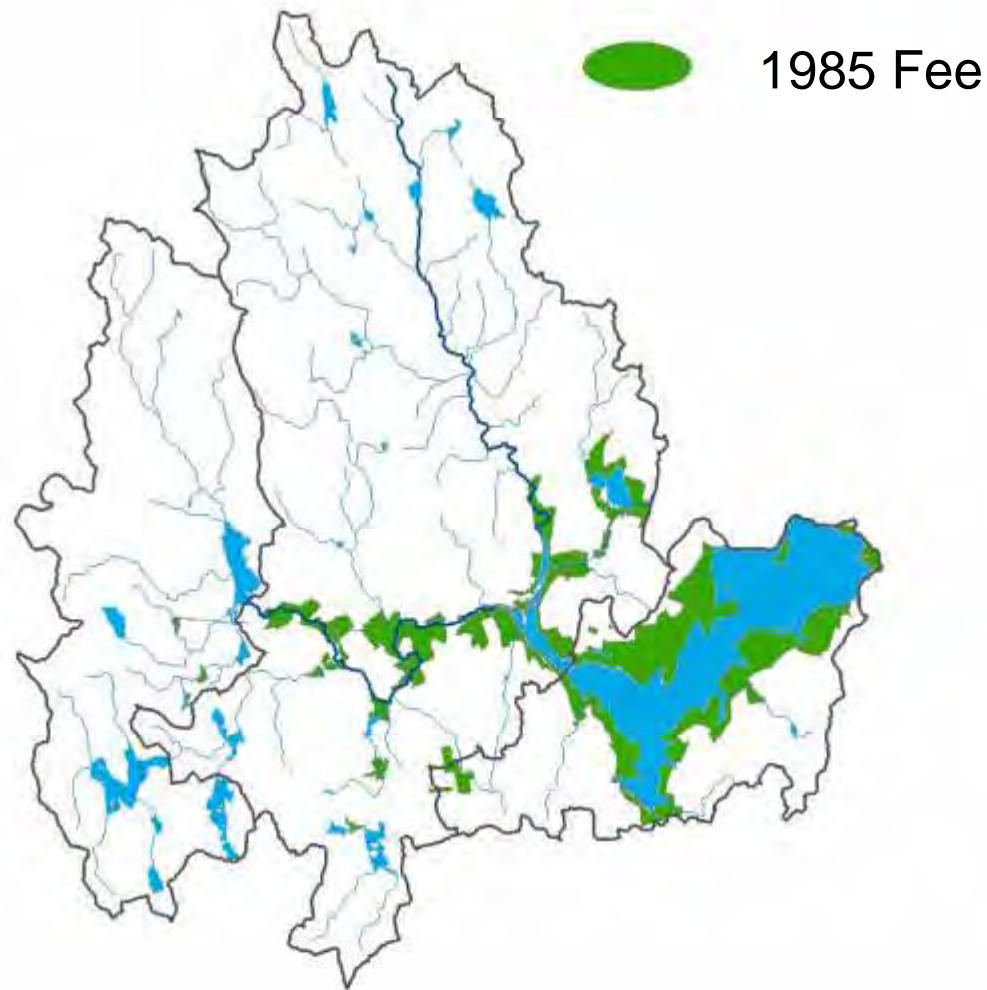
- 7.9% owned
- 5,608 acres almost all around Res, 2 main tribs
- Little buffer
- 1987 Open Space Bond Bill Passed



Second Phase – 1990s

Wachusett Watershed

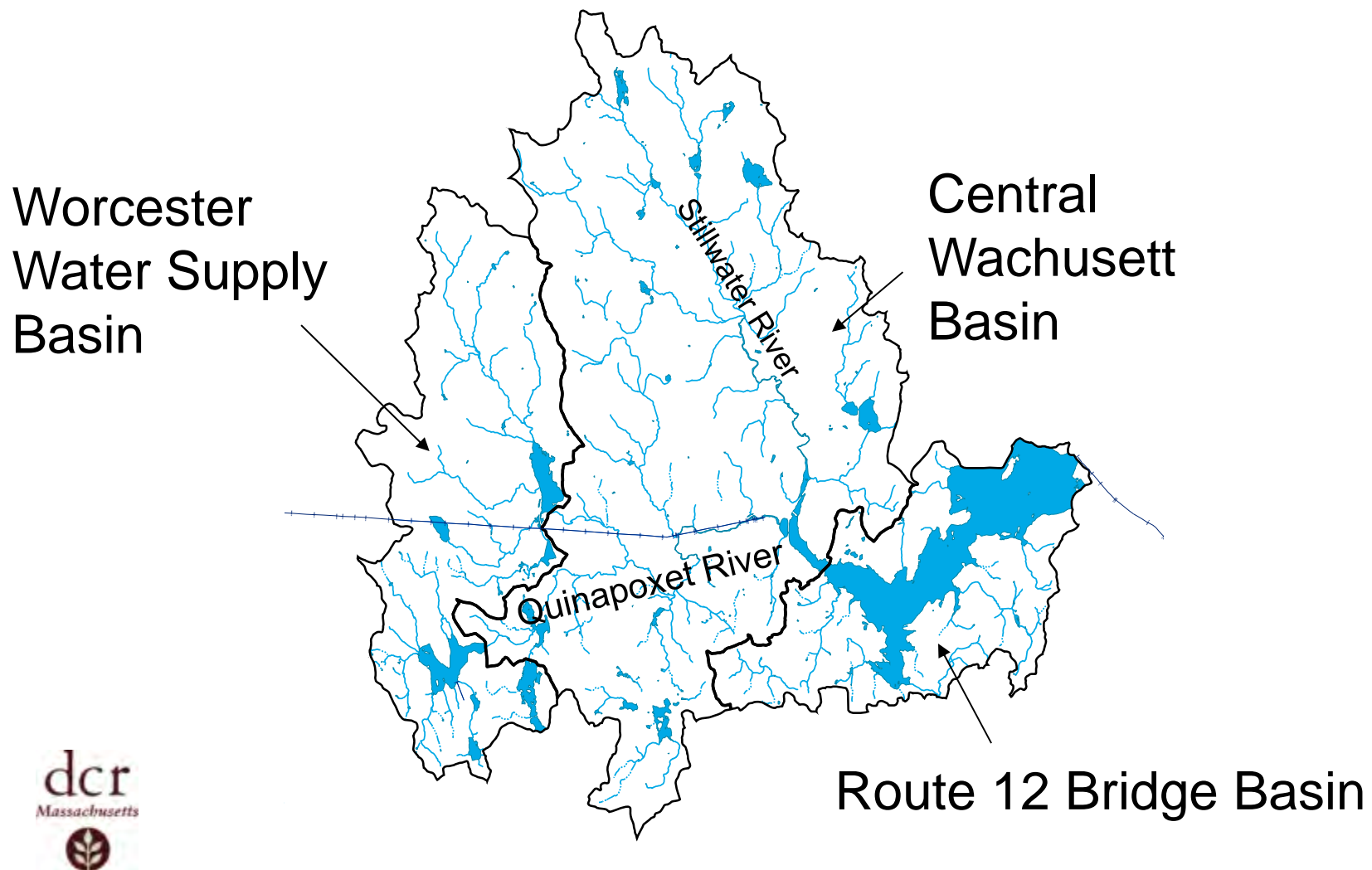
- 1992 Watershed Protection Act - \$135 million for acquisition and development rights
- MWRA/MDC develop Watershed Plans
- EPA sets 25% target for Wachusett



Scientific Method for Targeting Acquisitions in Wachusett Watershed

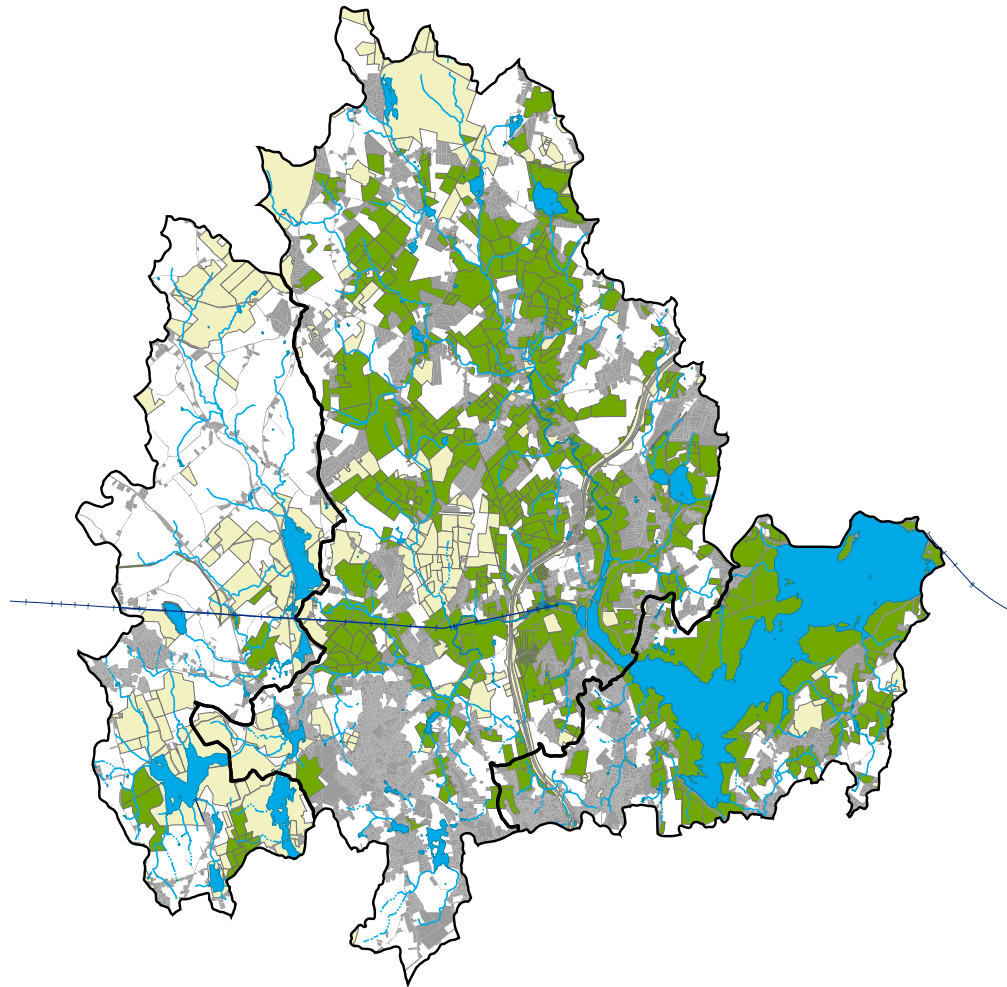
- Land Acquisition Panel is formed in 1993
- Bob O'Connor leads group of DCR + MWRA scientists, planners, engineers and foresters in “Expert Choice” analysis of land factors determining water quality protection
- GIS used immediately to rate every parcel of land
- Method heralded across water supply and land planning world

Three "Overlay" Basins



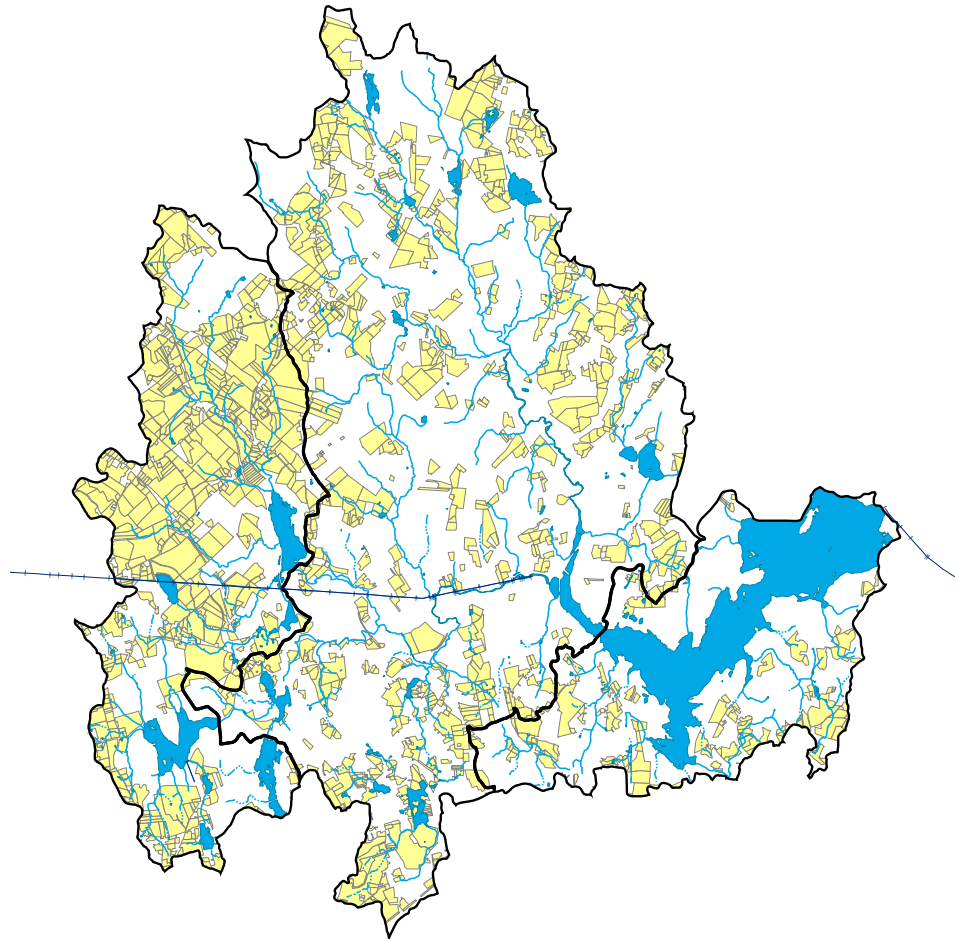
GIS Used to Screen Parcels

- Green is DCR Protected
- Yellow is Other Protected
- Grey is developed



GIS Used to Screen Parcels

Yellow is Potential
Developable Land



Wachusett Land Acquisition Model

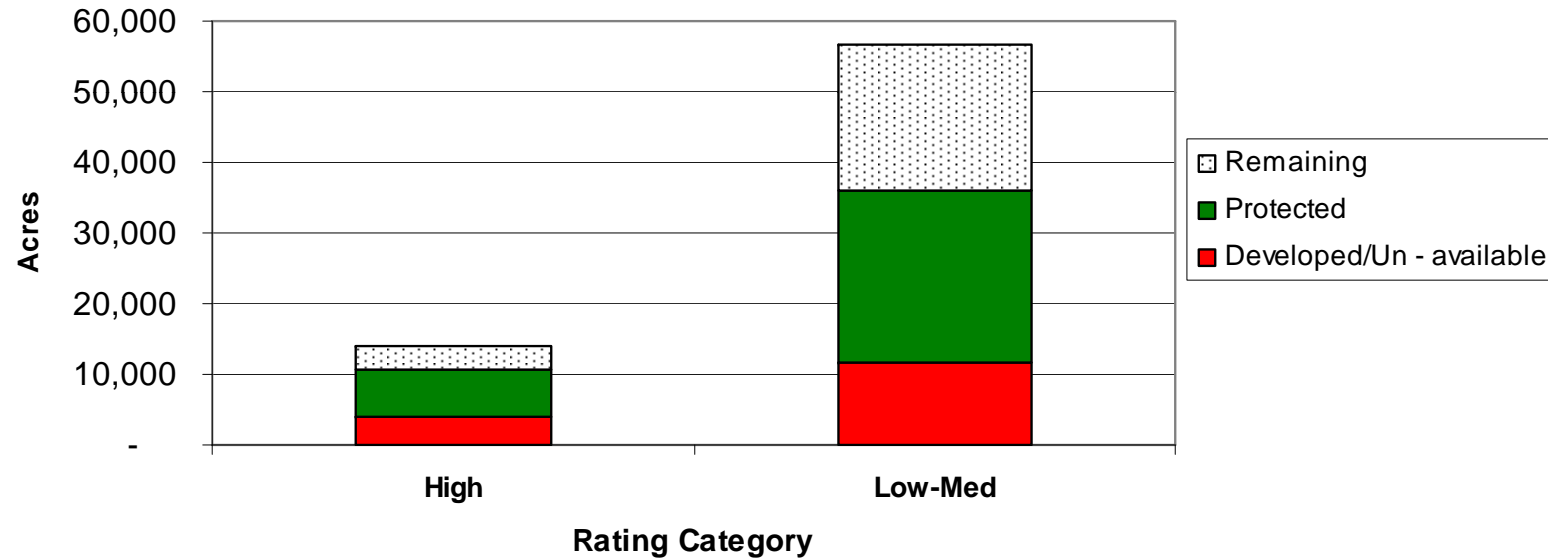
Expert Choice Comparison Analysis

	Criterion	Weight	Example #1	Example #2
A	> 8% Slope	0.018	1	1
B	Low yield aquifer	0.013	0	1
C	Medium/high yield aquifer	0.061	1	0
D	HD Res. zone, unsewered	0.072	0	0
E	HD Res. zone, sewered	0.027	1	1
F	Comm/Ind zone, unsewered	0.107	0	0
G	Comm/Ind zone, sewered	0.039	0	0
H	0-200 WsPA buffer	0.136	1	0
I	200-400 WsPA buffer	0.088	0	1
J	0-200 non-WsPA buffer	0.278	1	0
K	200-400 non-WsPA buffer	0.150	0	0
L	Other watershed lands	0.011	1	1
		Subtotal	0.531	0.157
	Overlay Basin	Weight		
1	Worcester Water Supply Basin	0.056		
2	Central Wachusett Basin	0.243	0.243	0.243
3	Route 12 Bridge Basin	0.701		
		Total Score	0.129	0.038
		Rating	6	3
		High Priority?	YES	NO

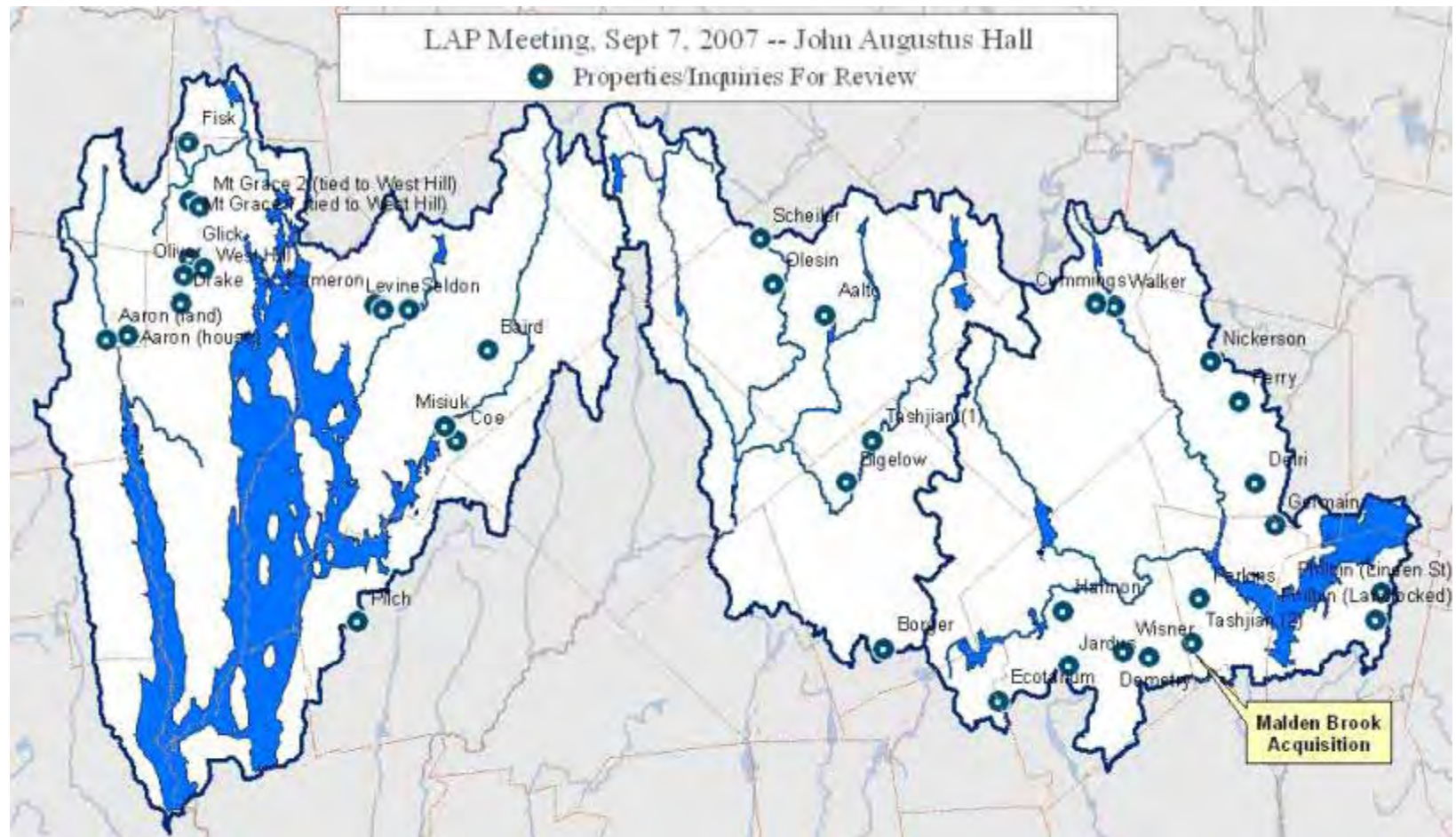


Remaining High Priority Lands

Breakdown of Watershed Protection Lands by Rating Group
Wachusett Watershed - 2007



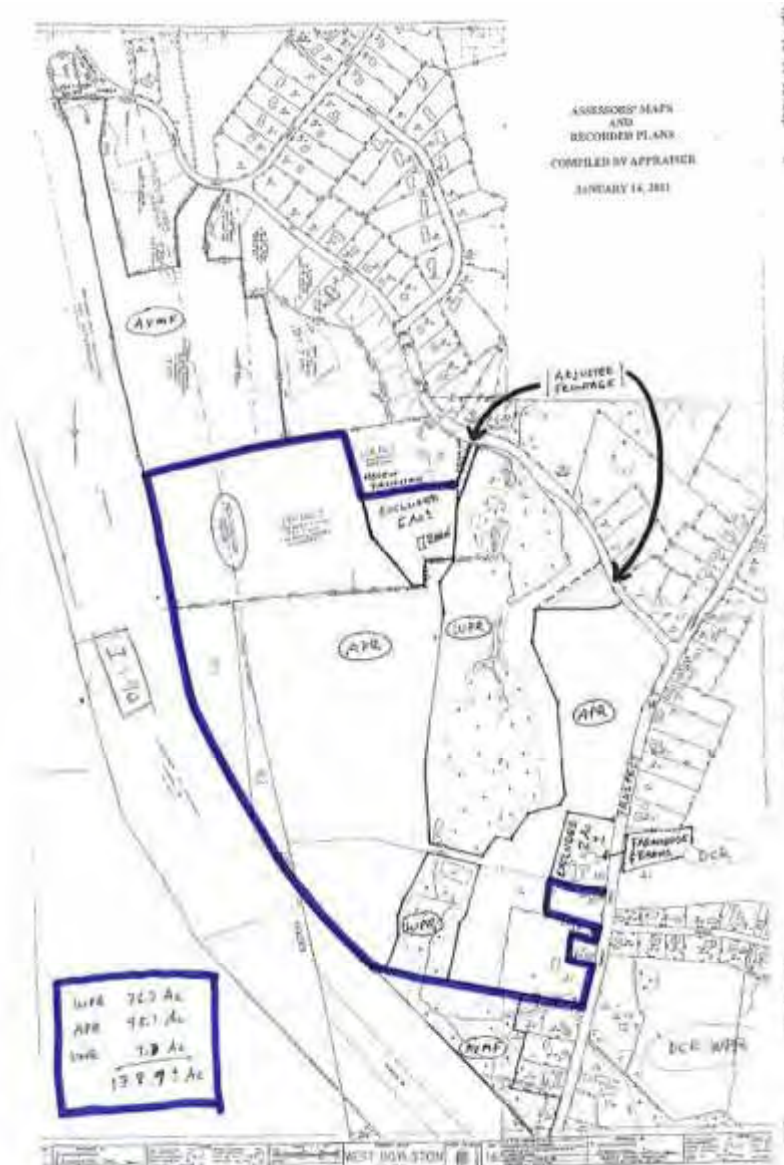
LAP Process



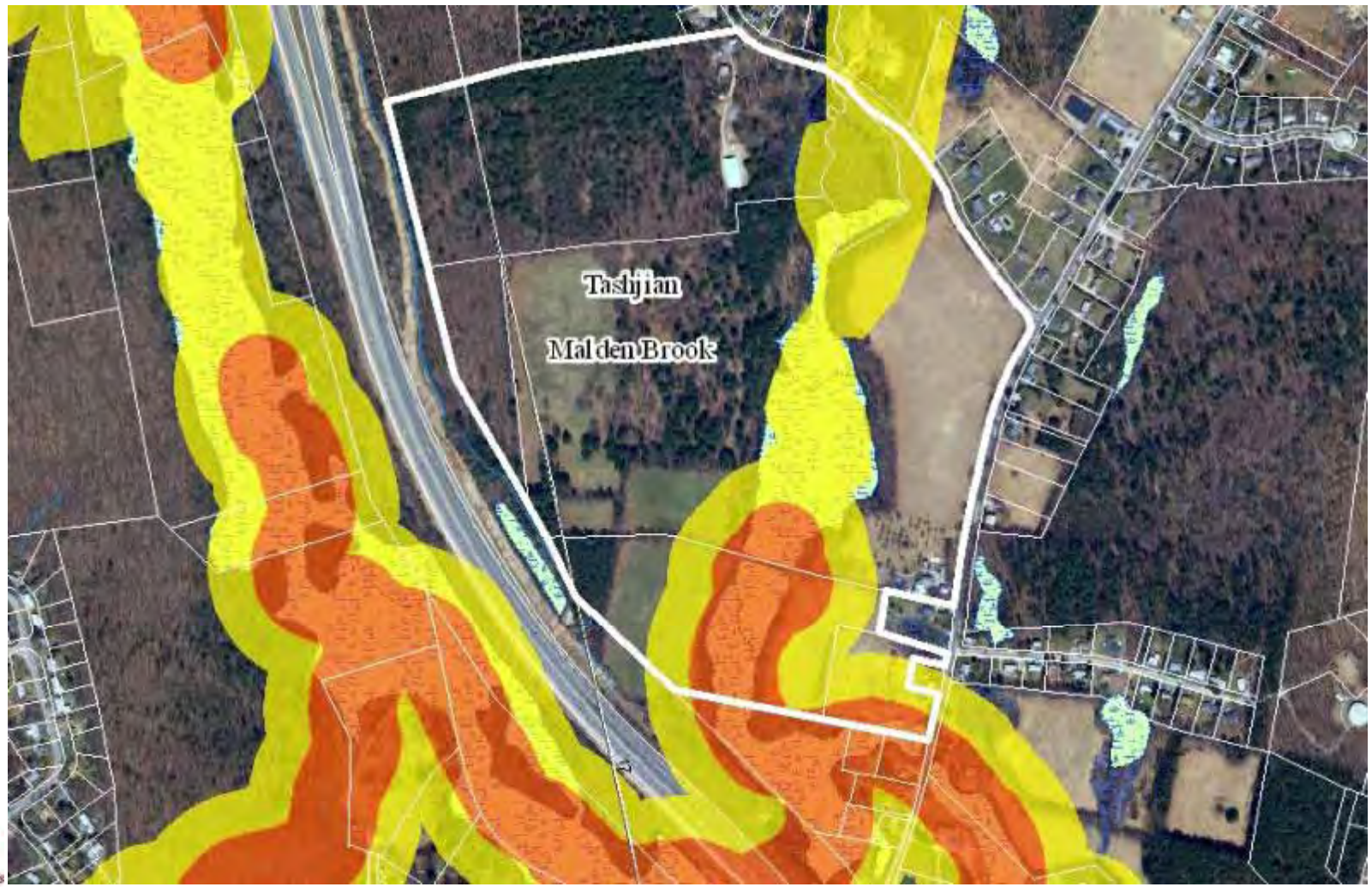
LAP Process



LAP Process



LAP Process – WsPA Zones



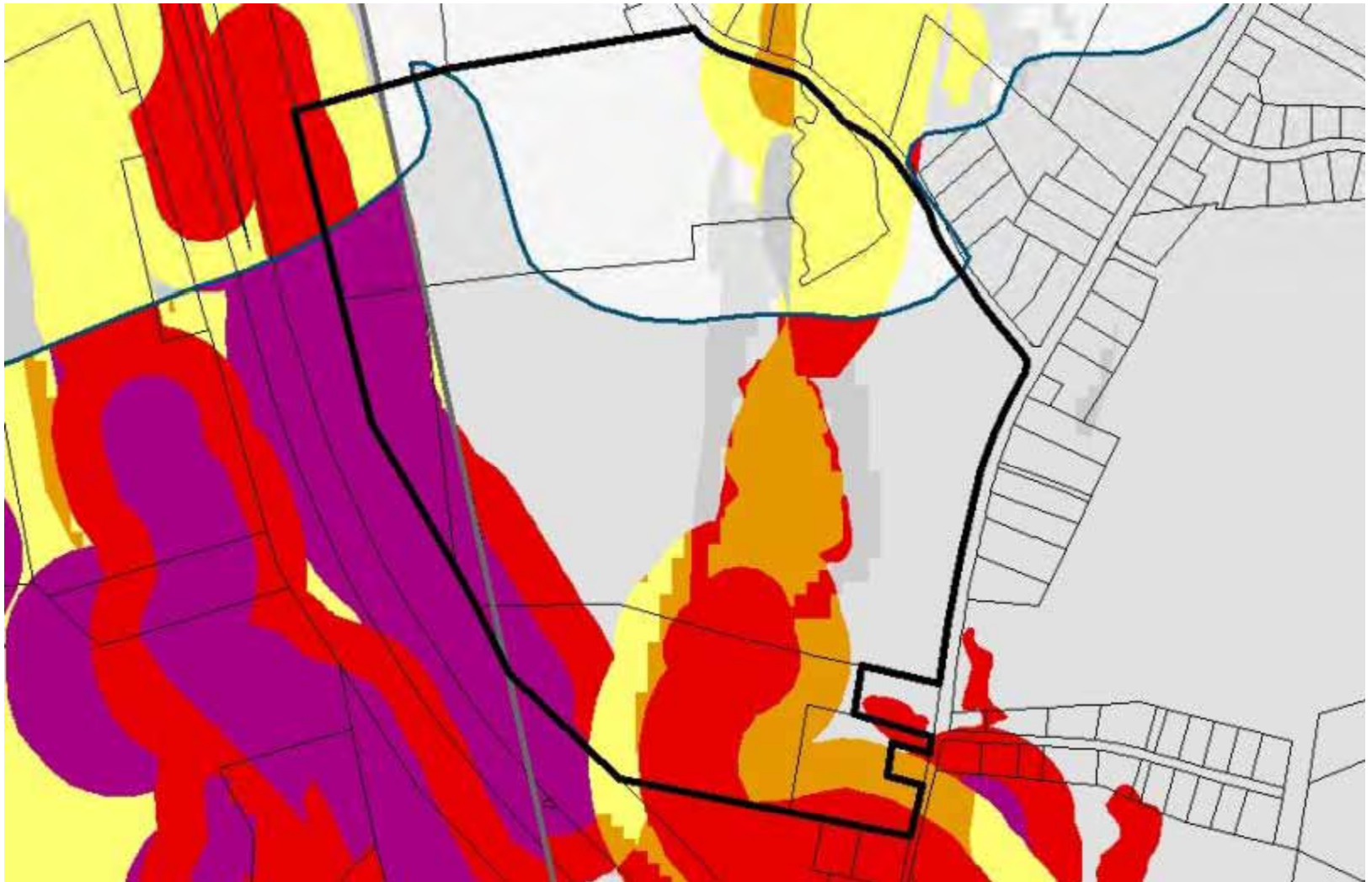
LAP Process - Pictometry



LAP Process - Pictometry

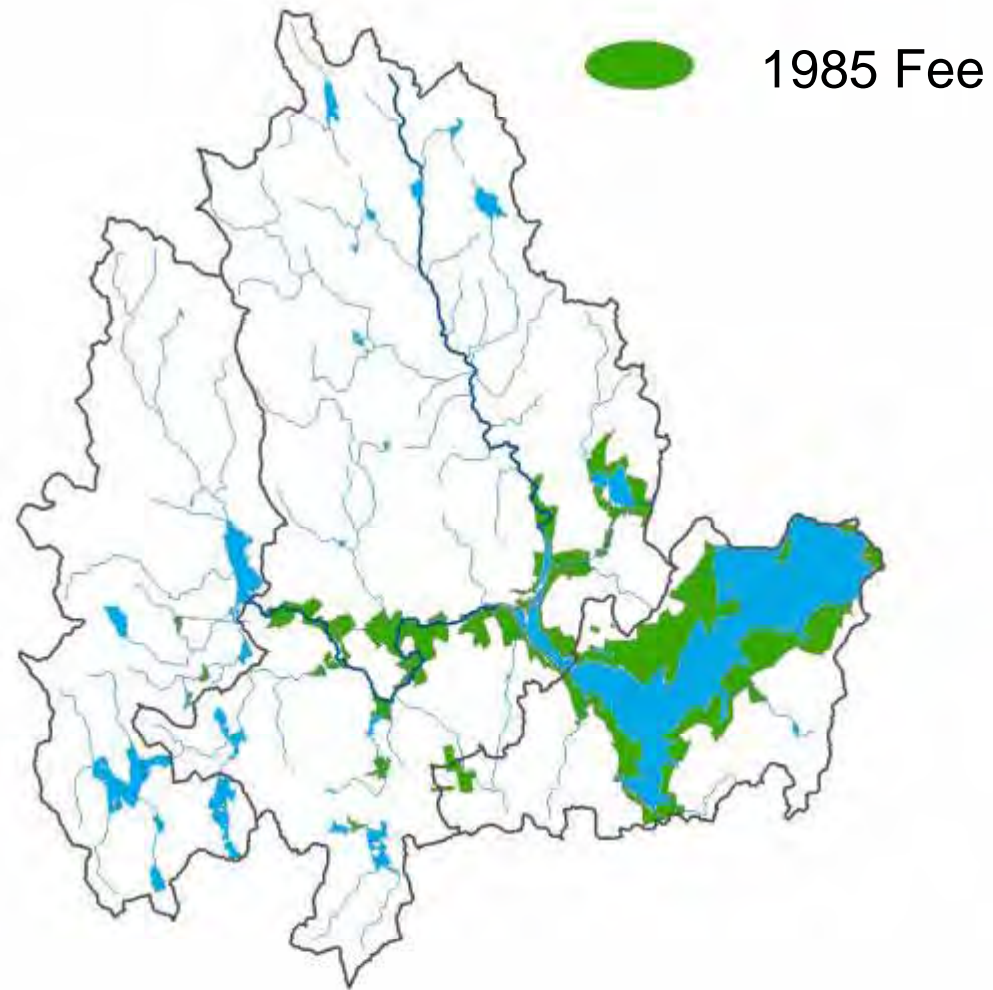


LAP Process – Model Score Overlay



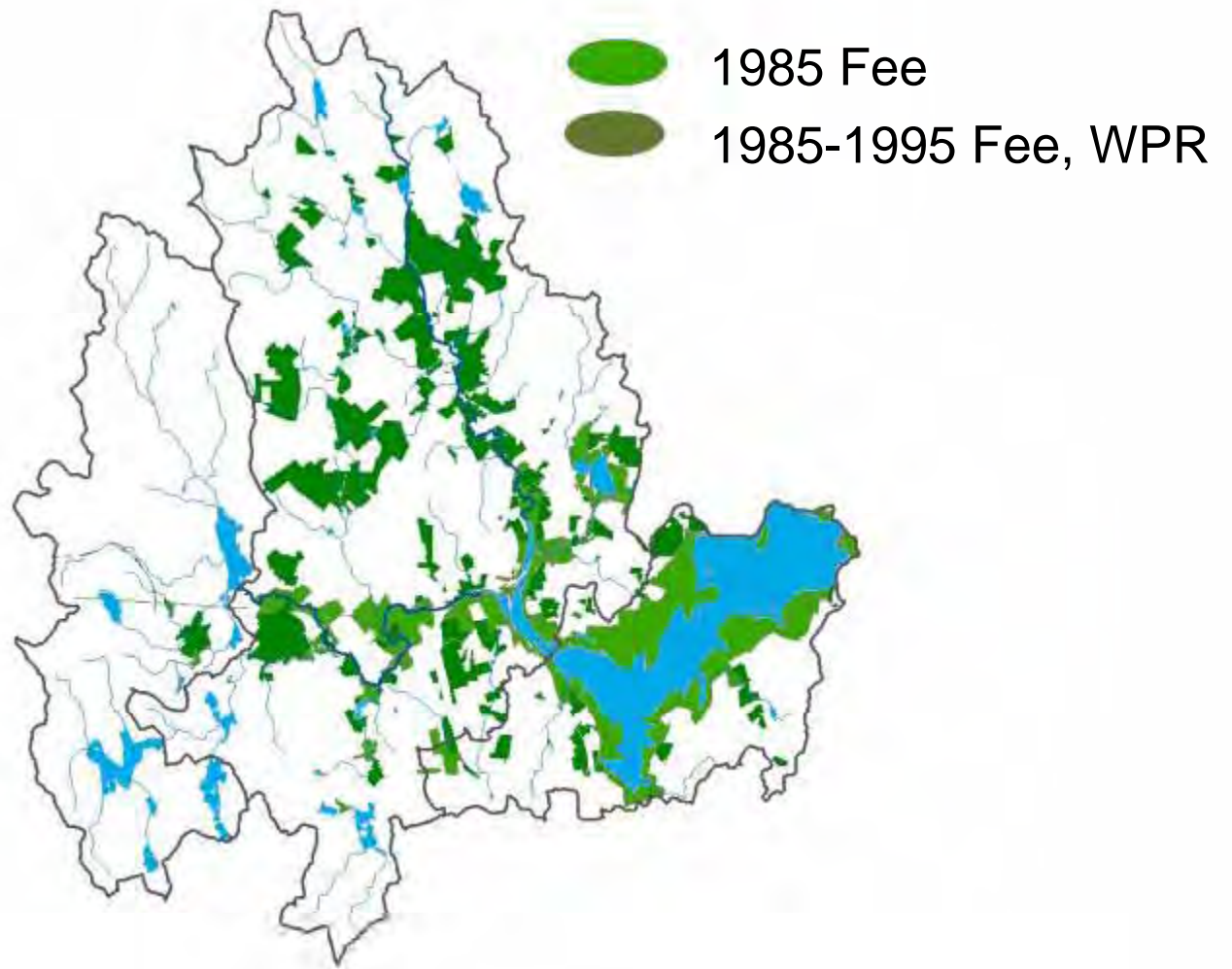
DWSP Owned Land - 1985

Wachusett Watershed



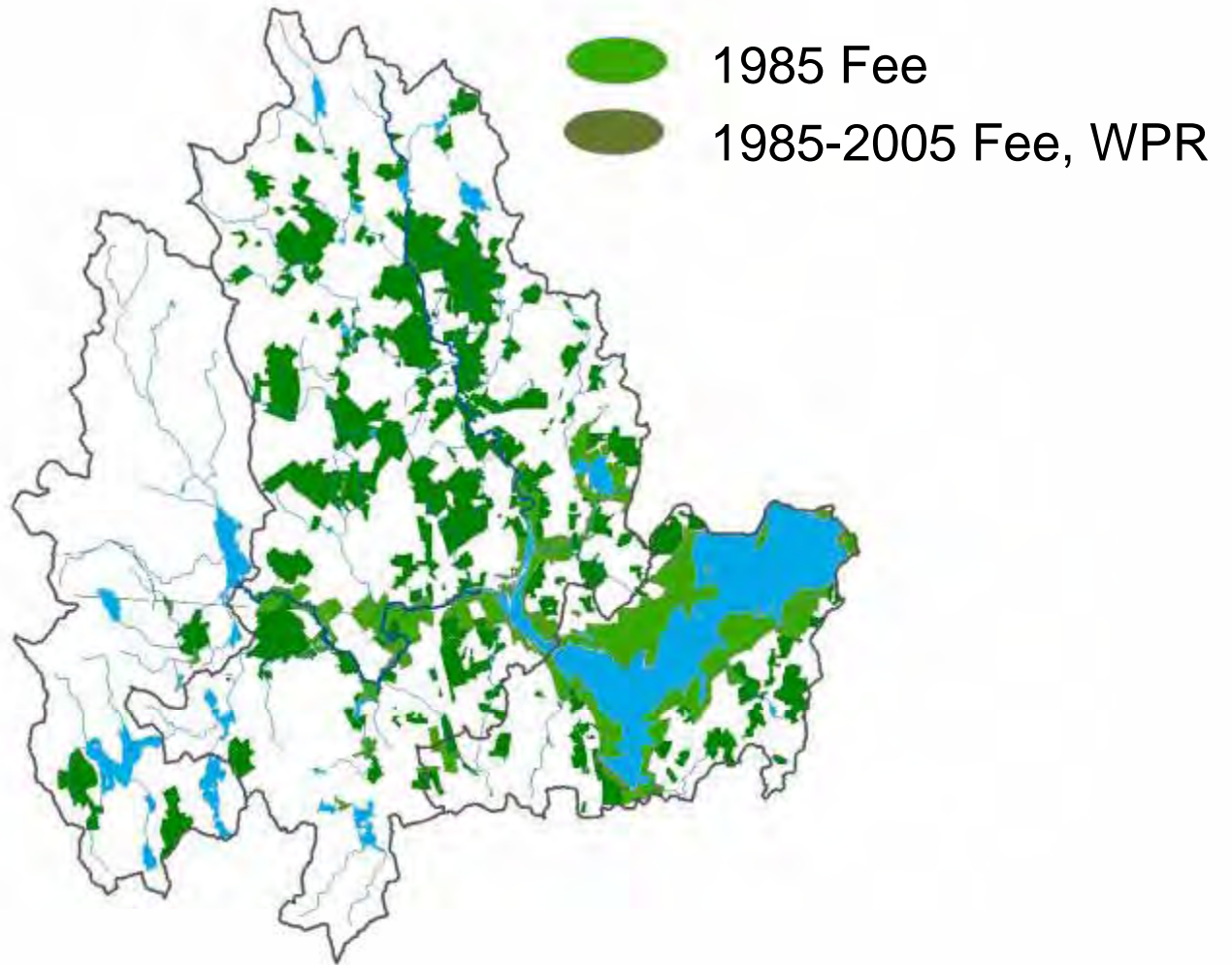
DWSP Protected Land - 1995

Wachusett Watershed



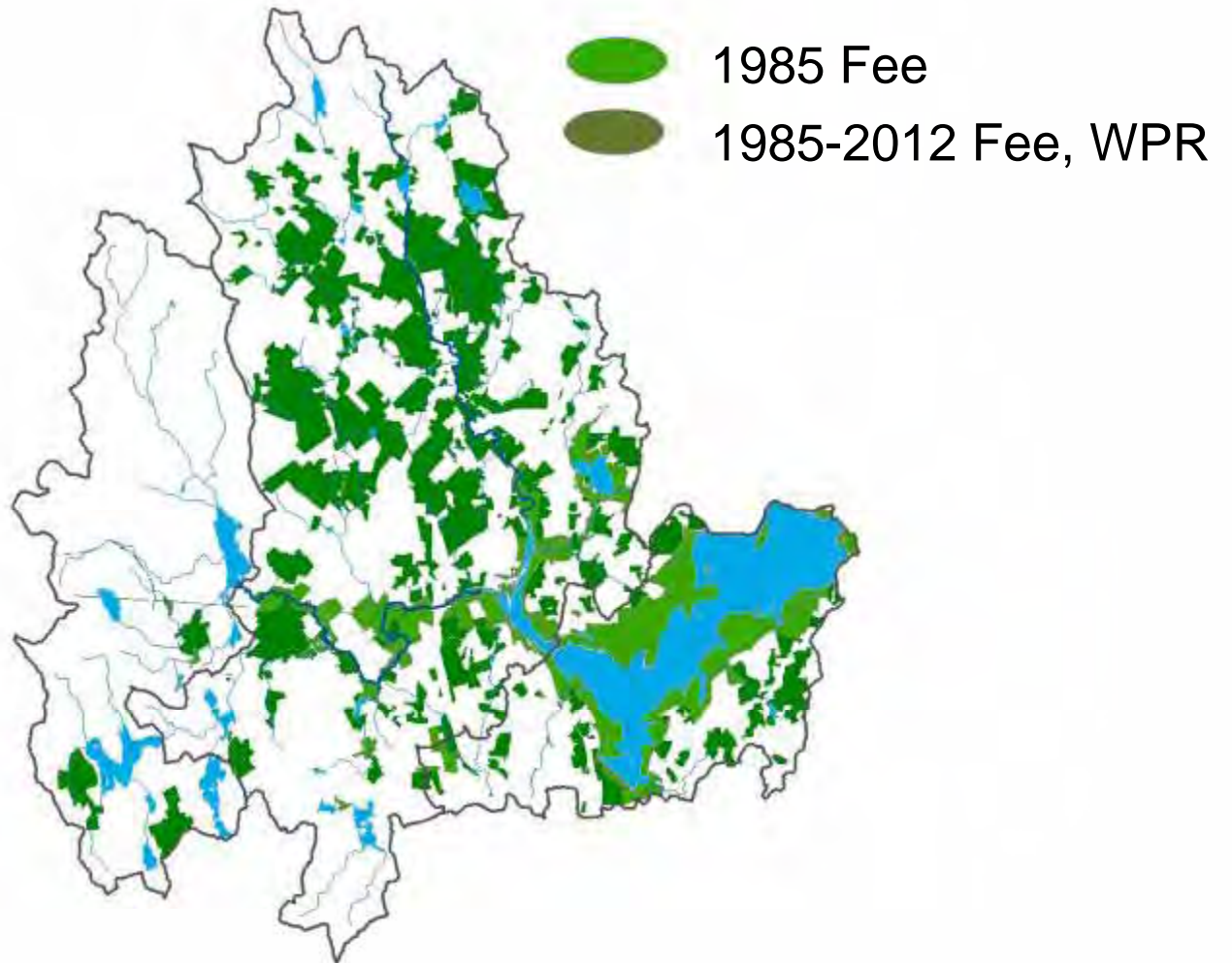
DWSP Protected Land - 2005

Wachusett Watershed



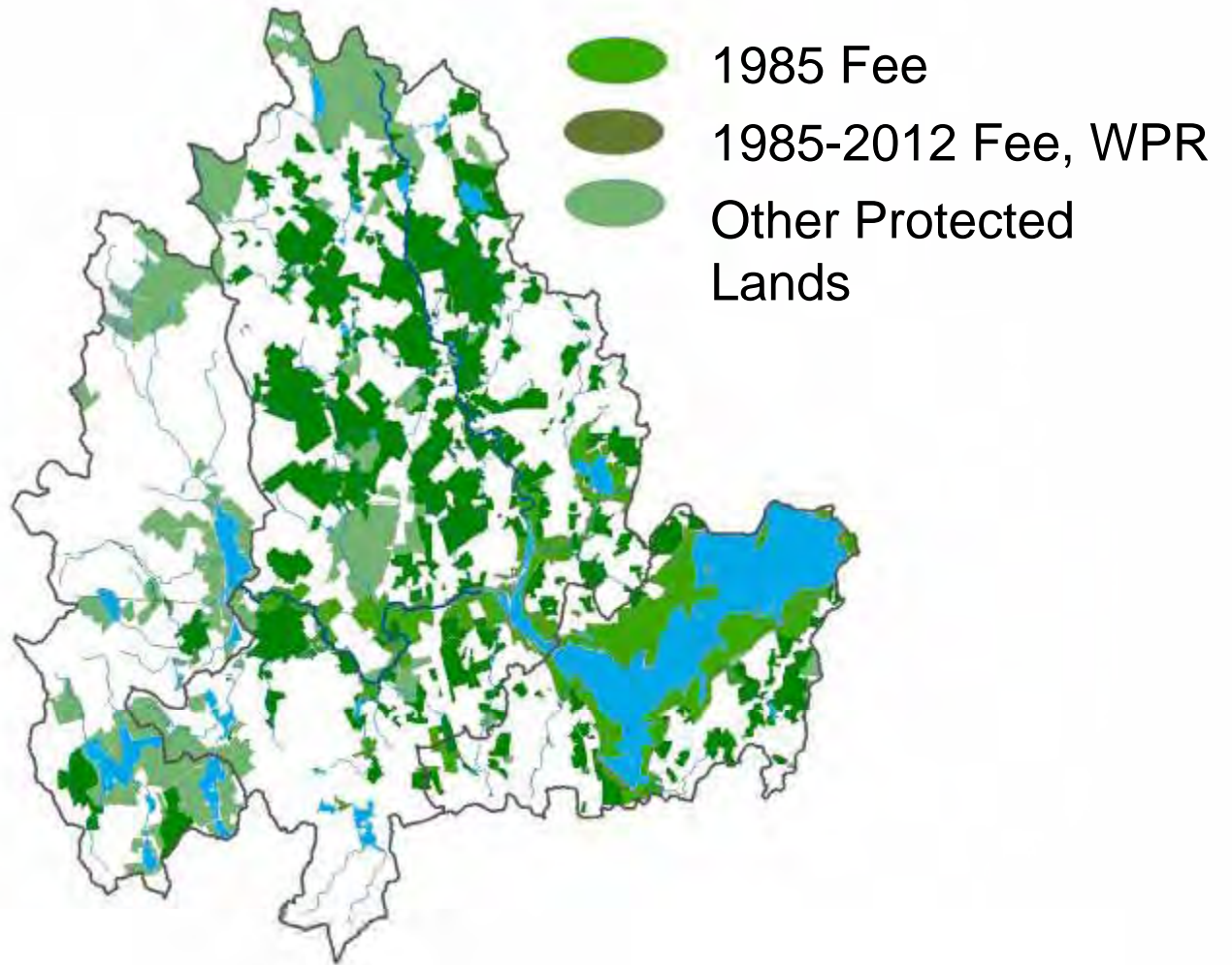
DWSP Protected Land - 2012

Wachusett Watershed



DWSP, Other Protected Land - 2012

Wachusett Watershed



DWSP Land Ownership Over Time: 1985 - 2012

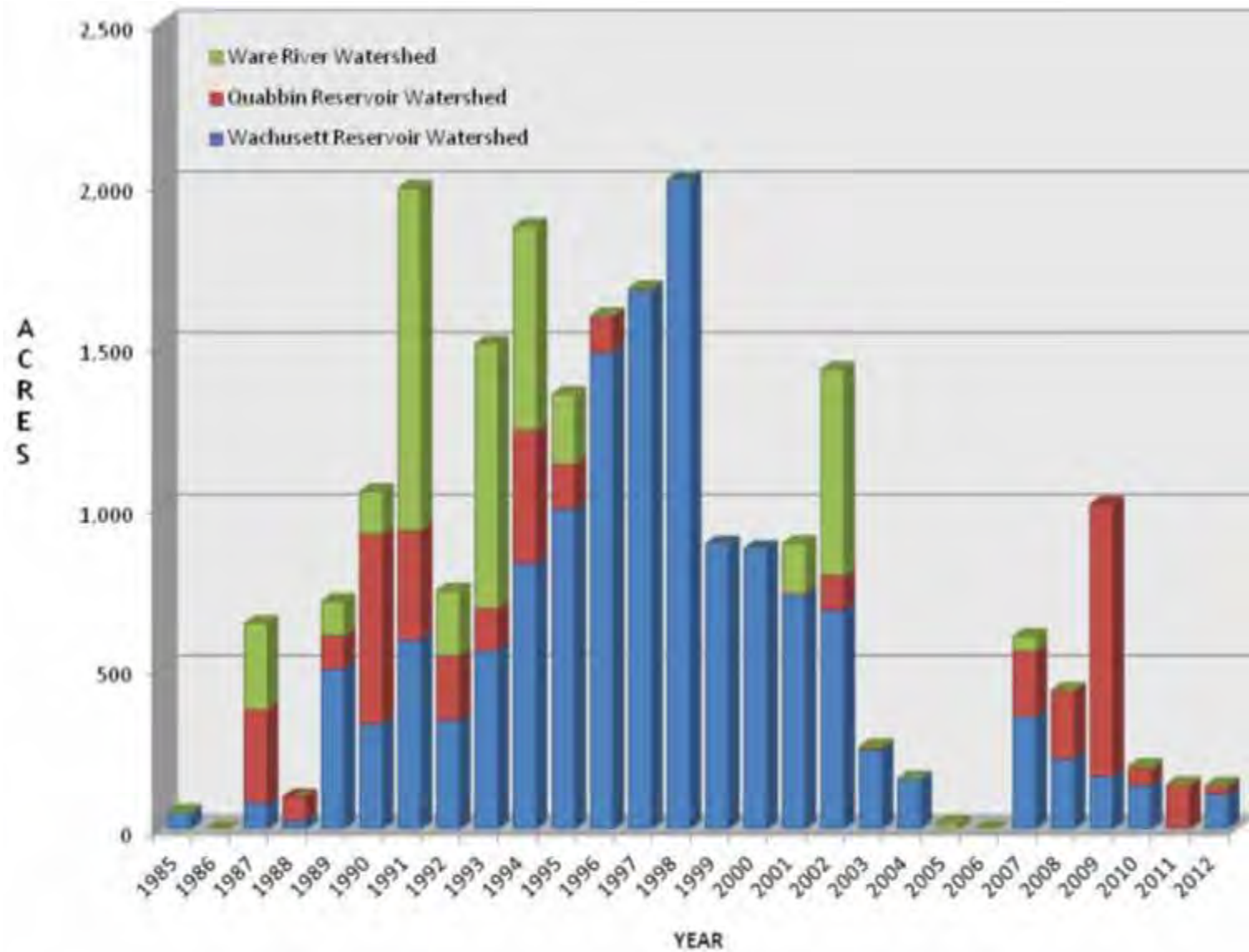
Watershed	1985		1998		2003		2007		2012	
	Acres	% of Watershed	Acres	% of Watershed	Acres	% of Watershed	Acres	% of Watershed	Acres	% of Watershed
Wachusett Reservoir	5,608	7.9%	15,861	22.4%	18,387	25.9%	18,990	26.8%	19,627	27.8%
Quabbin Reservoir	51,792	54.3%	54,203	56.9%	54,321	57.2%	54,517	57.1%	55,787	58.4%
Ware River	19,300	31.3%	22,838	37.0%	23,694	38.2%	23,568	38.2%	23,576	38.2%

DWSP Watershed Acquisitions: 1985 - 2012

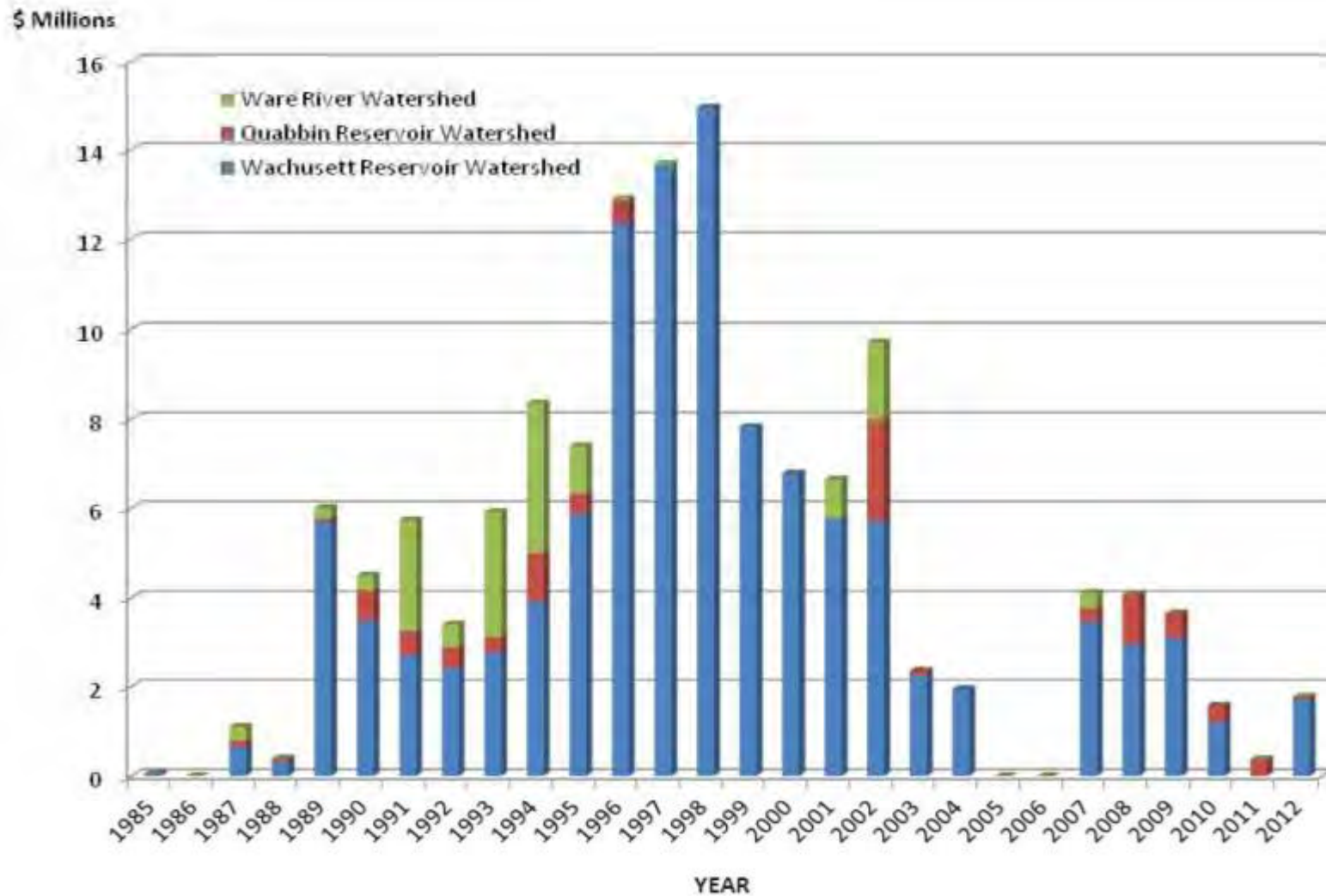
	Total Fee	Total CR	Total Acquired	Total Awards	avg/ac
Wachusett	11,420.7	2,504.3	13,925.0	\$110,782,135	\$7,956
Ware	3,395.7	980.8	4,376.5	\$12,950,150	\$2,959
Quabbin	2,043.8	1,970.0	4,013.8	\$7,114,200	\$1,772
All	16,860.2	5,455.1	22,315.3	\$130,846,485	\$5,864

	DCR % watershed 1985	DCR % watershed 2012	other protected lands % watershed	Total Protected	1% of watershed area (acres)
Wachusett	7.9%	27.8%	16.7%	44.5%	706
Ware	31.3%	38.2%	9.4%	47.6%	620
Quabbin	54.3%	58.4%	10.1%	68.5%	960
Total Active System	33.6%	43.4%	11.9%	55.3%	2,290

Land Acres Acquired Annually by Watershed: 1985 - 2012



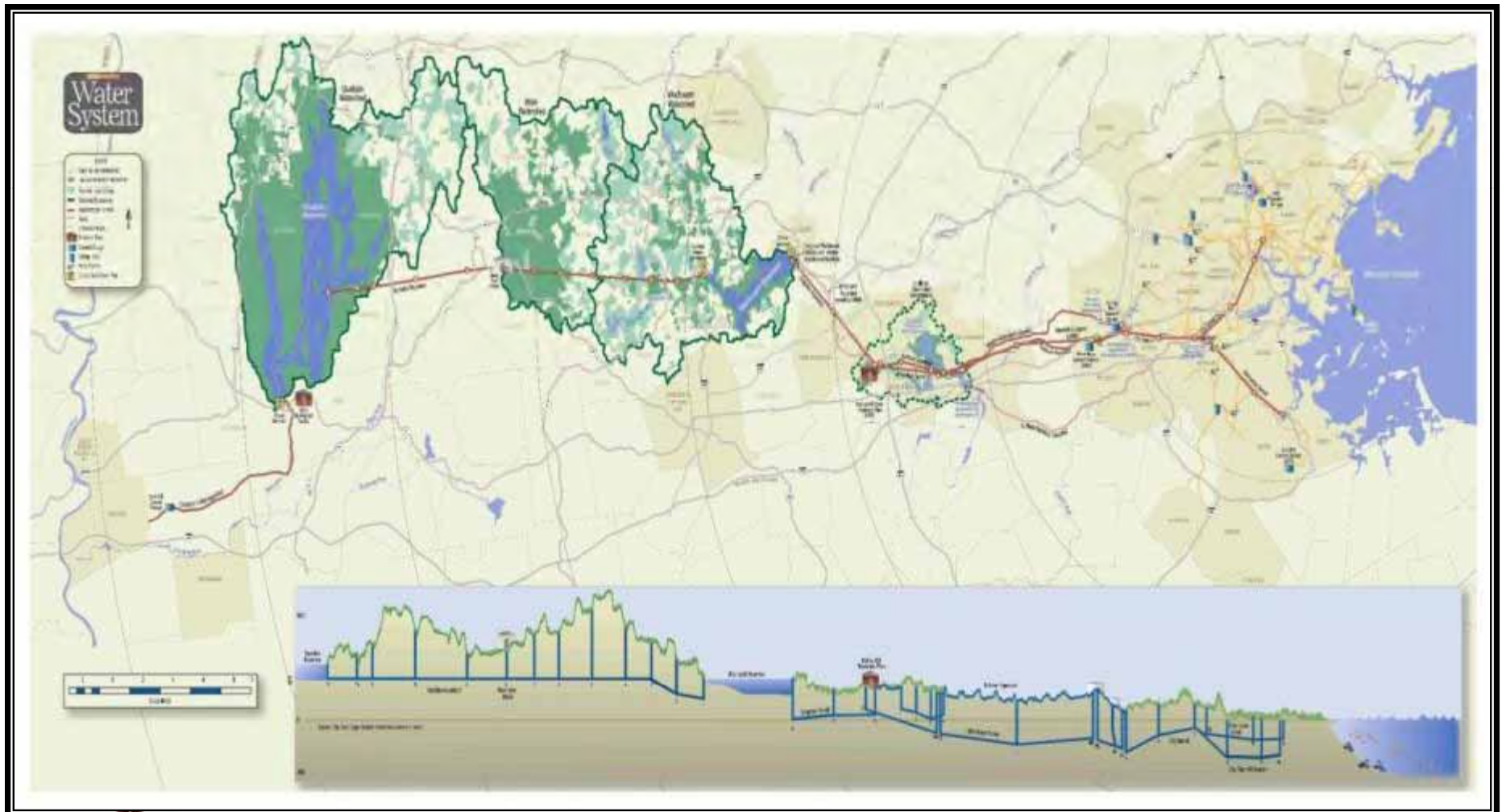
Land Acquisition Spending by Watershed: 1985 - 2012



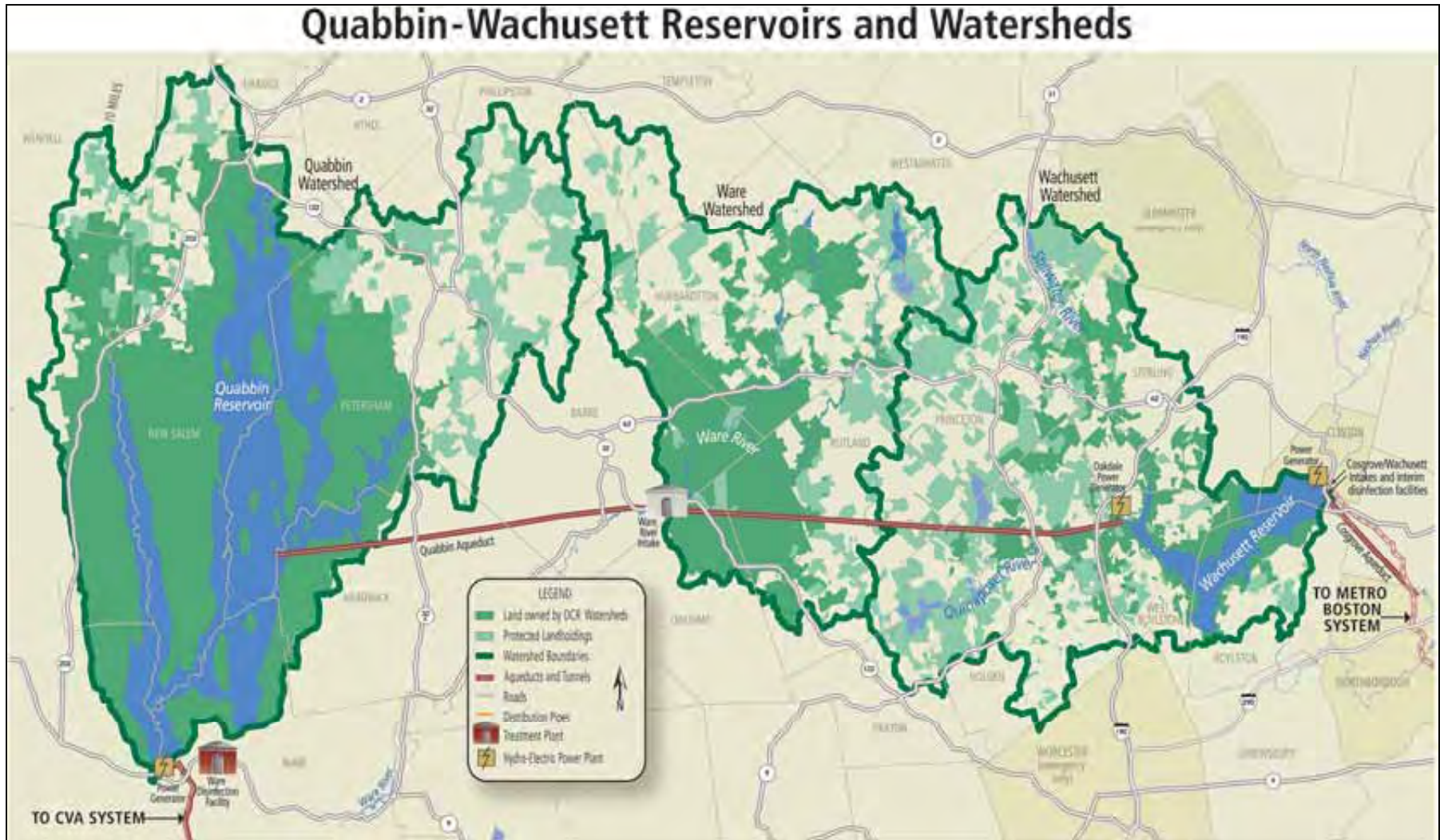
Milestones Reached

- During 27 year program, now over 500 parcels acquired
- Over 22,000 acres protected
- Over 5,000 acres in WPRs acquired
- \$130 million Spent
- Wachusett watershed acquisitions played large role in successful filtration avoidance decision by federal courts
- Program is a national model in science-based acquisition targeting and use of GIS

Overall DCR-MWRA Water System

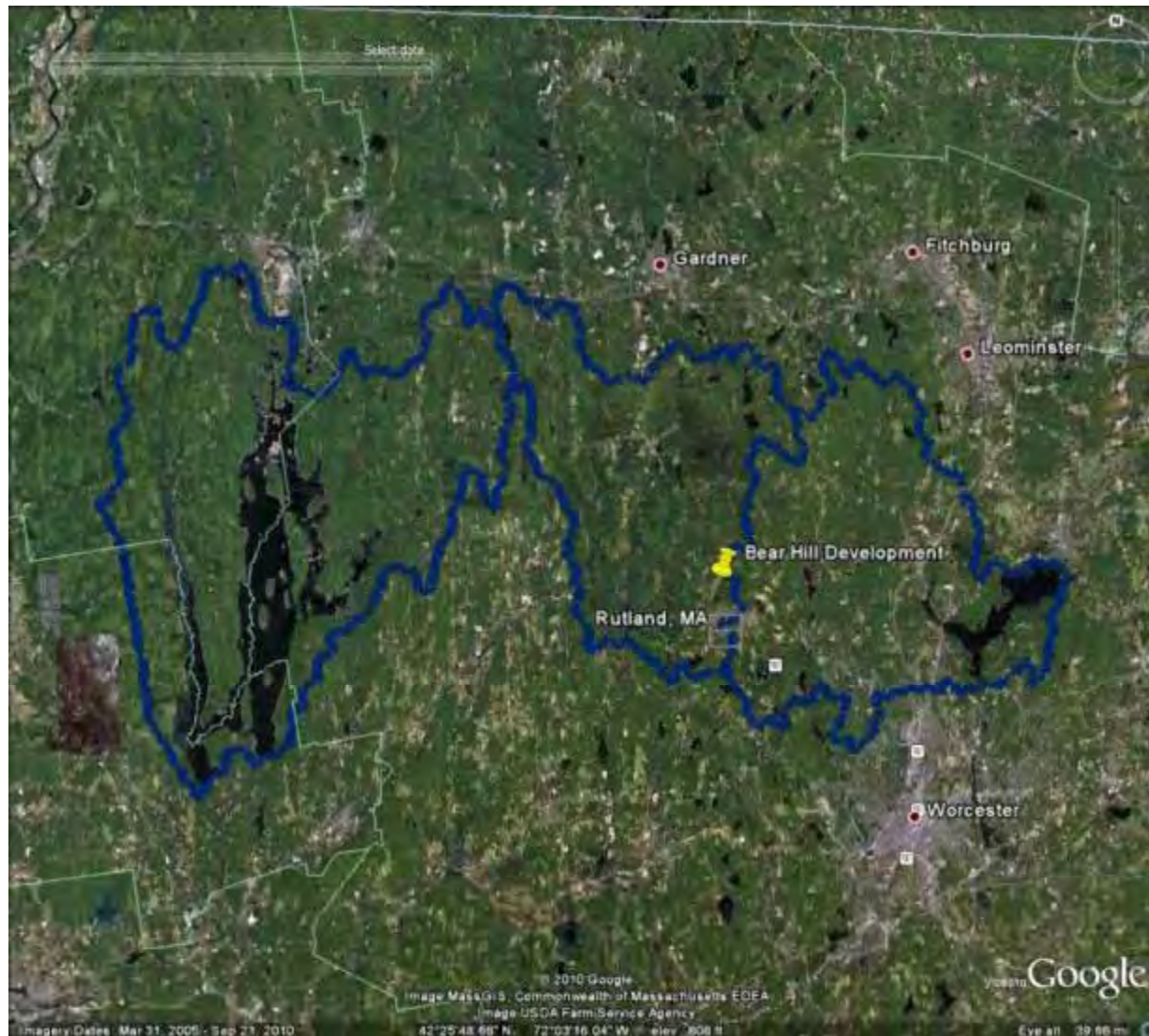


Quabbin-Ware-Wachusett Watersheds



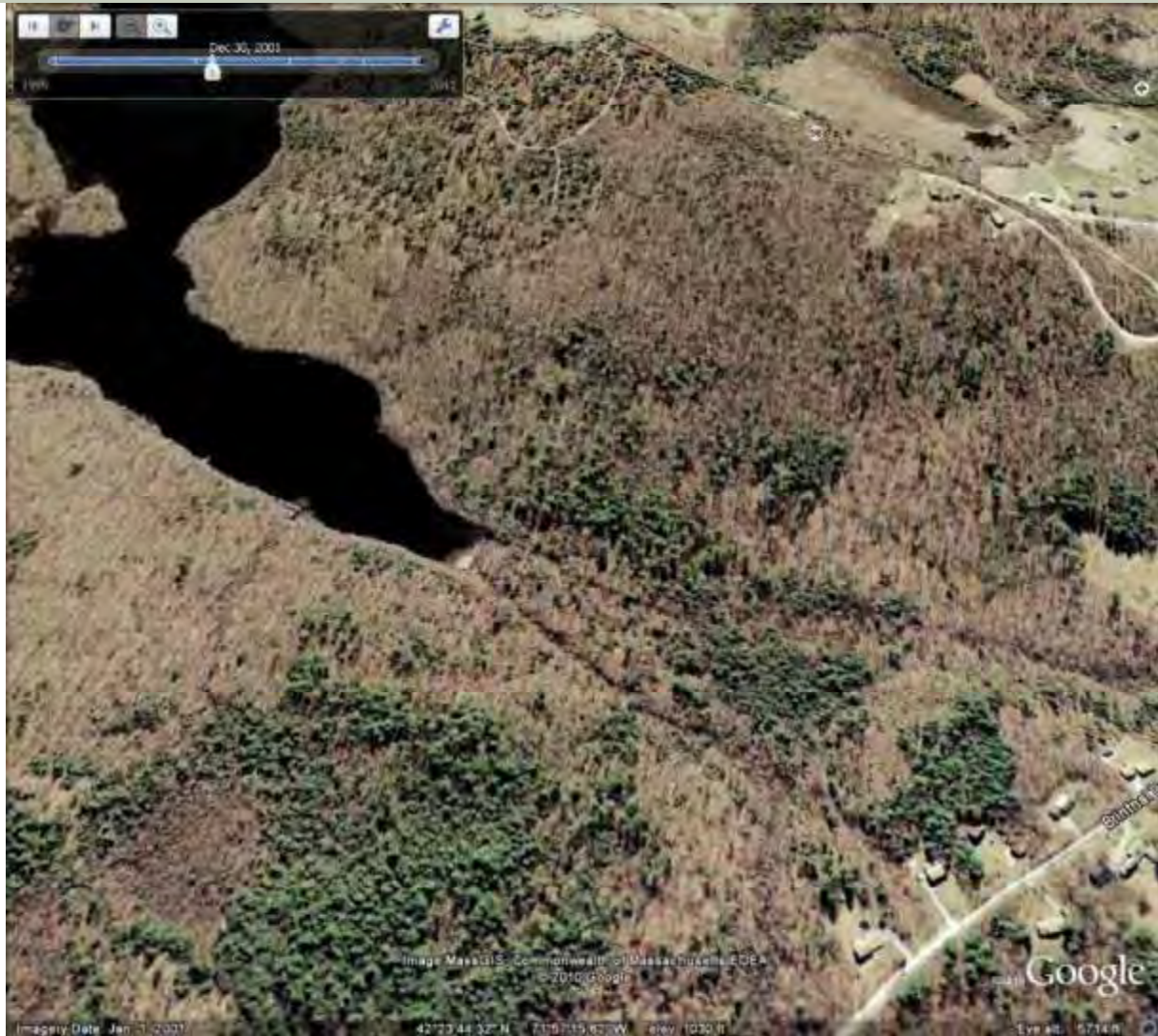
WSPA Enforcement in Action: Bear Hill Subdivision, Rutland

What can
happen
without land
acquisition



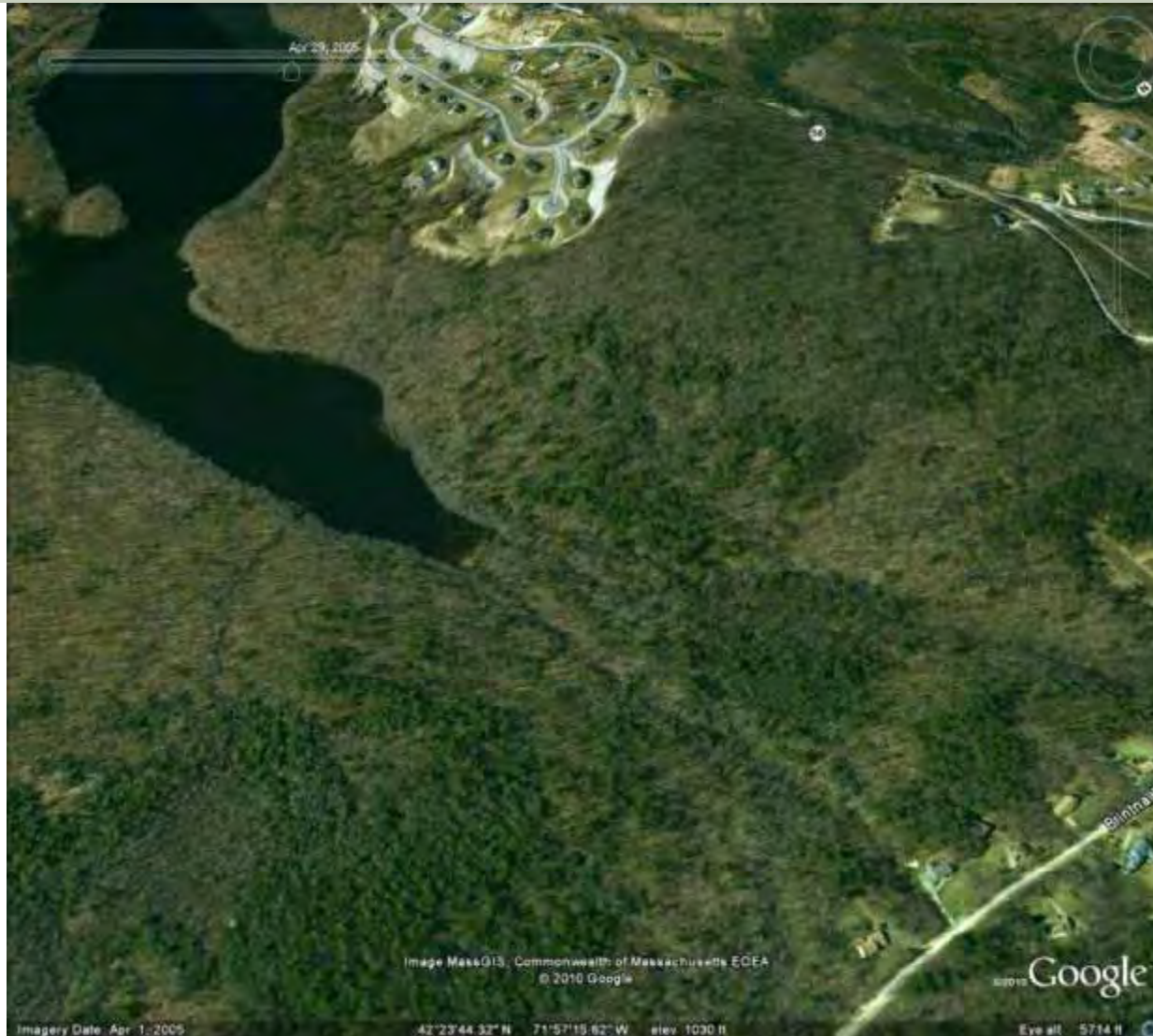
WSPA Enforcement in Action: Bear Hill Subdivision, Rutland

2001



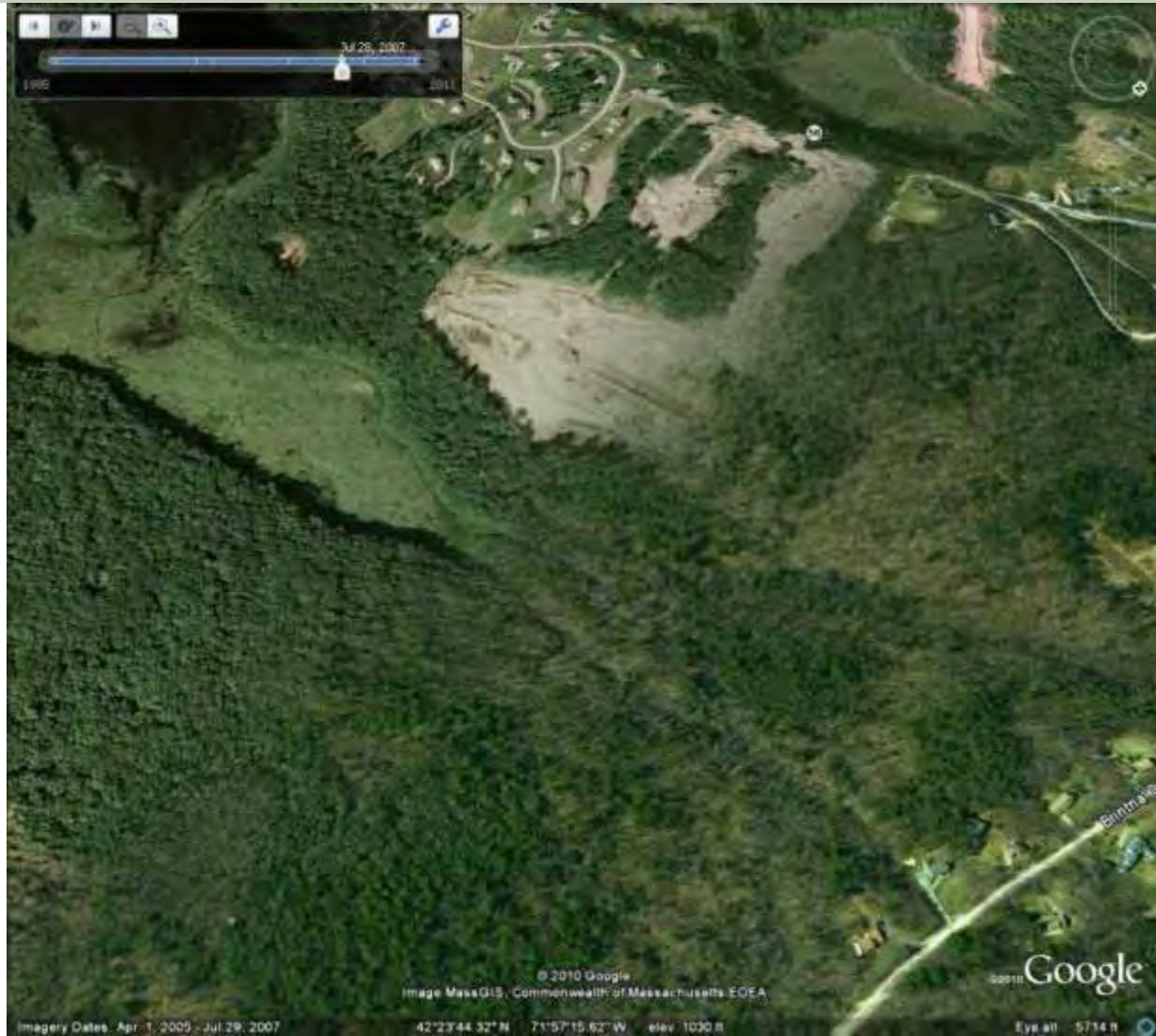
WSPA Enforcement in Action: Bear Hill Subdivision, Rutland

2005



WSPA Enforcement in Action: Bear Hill Subdivision, Rutland

2007



© 2010 Google

WSPA Enforcement in Action: Bear Hill Subdivision, Rutland

2008



WSPA Enforcement in Action: Bear Hill Subdivision, Rutland

2010



WSPA Enforcement in Action: Bear Hill Subdivision, Rutland



WSPA Enforcement in Action: Bear Hill Subdivision, Rutland

DCR has worked with DEP and the Attorney General for over six years to control the environmental damages from this construction site in the Ware River watershed.



One of the first erosion events, November 2006

- ***Bear Hill Timeline***
- **2004:** Proposed 53 houses on 71 acres on steep hill adjacent to Moulton Pond.
- **2005-2006:** Initial application for local (Zoning and Wetlands), state (Watershed Protection Act), and federal (401 Water Quality Certification) permits.
- **Fall 2006:** Construction Begins
 - *October – Immediate erosion problems identified by DCR.*
 - *November – DEP investigation.*
 - *December – Initial state enforcement action.*
- **2007:** Attorney General files complaint after one year of efforts to stop environmental degradation.

WSPA Enforcement in Action: Bear Hill Subdivision, Rutland

Builder has been found guilty of violating both the Watershed Protection Act and the Wetlands Protection Act. Currently awaiting final penalty.



Overwhelmed erosion controls with sediments flowing through wetland to Moulton Pond, November 2008.

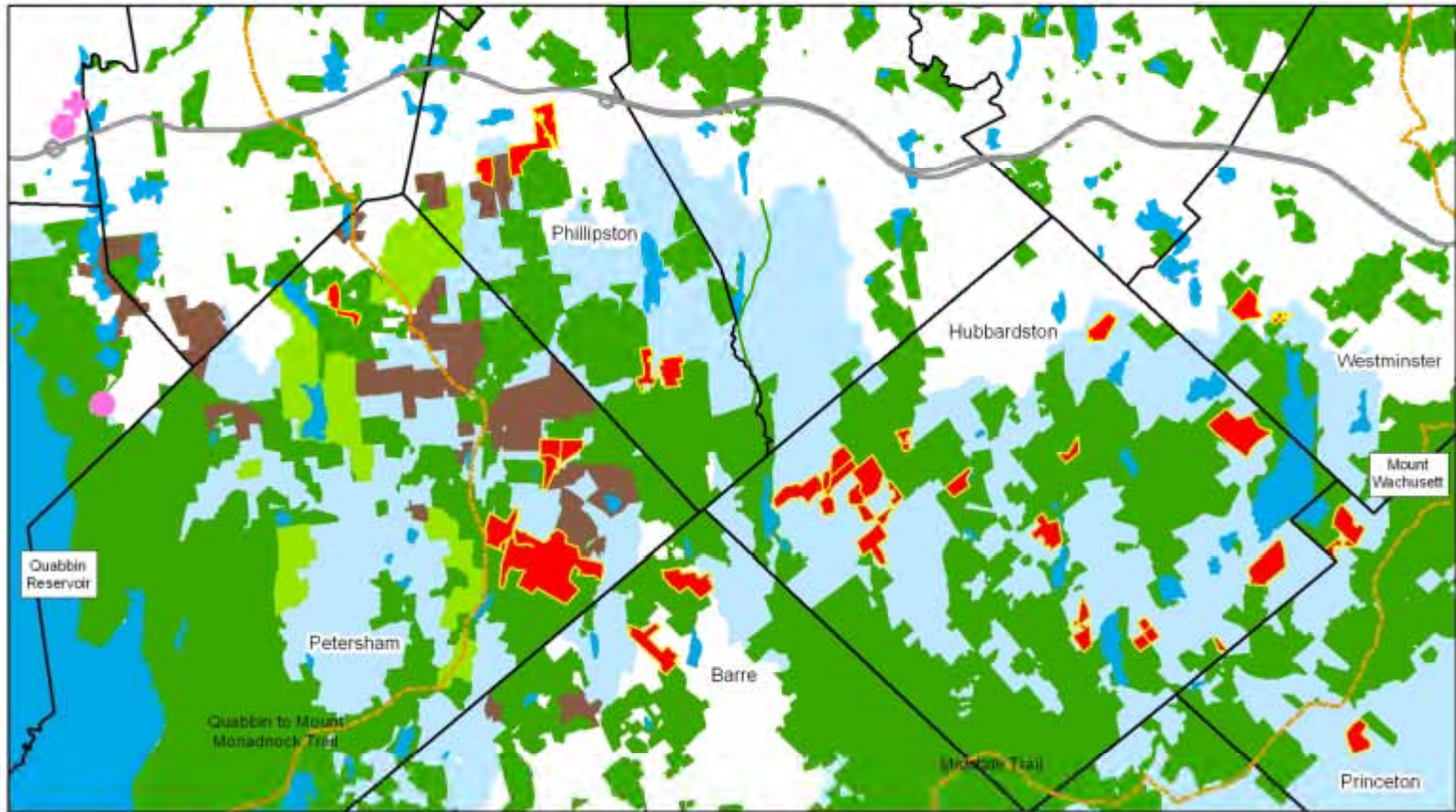
Bear Hill Timeline

- **2008:** Ongoing Enforcement
 - *Process started for new WsPA Variance and other permits for improved wetland crossing.*
 - *New violation identified relating to an encroachment into the WsPA Primary Zone.*
- **2009:** New permits granted with focus on improved erosion control measures.
- **2010:** Enforcement proceedings continue.
 - *WsPA encroachment resolved without court involvement.*
 - *Wetland and water quality violations proceed to Superior Court. AG submits a motion for a penalty of \$925,188.*
- **2011:** Site continues to pose water quality threats to the watershed.
 - *Superior Court hearings to determine penalty. Ruling expected in spring 2012.*
 - *Ongoing inspections find continual sediment and erosion problems. DCR, DEP, and AG pursue additional enforcement efforts to control the site.*

Use of Non-MWRA Funds

- Gifts and Bargain Sales (Fed Deductions + State Tax Credits)
- Collaboration with Non-Profits
- USDA's Forest Legacy Program
- Municipal Acquisitions

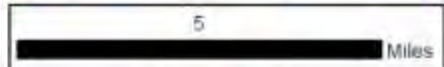
"Q2W" Forest Legacy Application



Legend:

- Q2W Forest Legacy Tracts
- Completed Forest Legacy Tracts
- Harvard Forest Lands
- Permanently Protected Conservation Land
- Greater Boston Public Drinking Water Supply Zone
- Town Boundary
- Route 2 Highway
- Long Distance Trails
- Dry Hill
- Saw Mill

**Quabbin Reservoir to
Wachusett Mountain
(Q2W)
FY13 Forest Legacy
Grant Application**



Source Credit: MassGIS

Map by IORLP

"Q2W" Forest Legacy Application

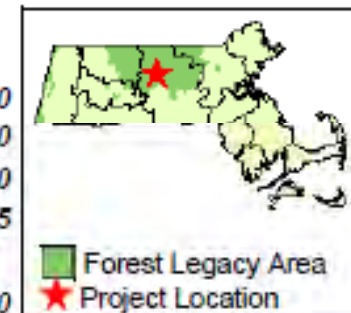
Forest Legacy Project



Quabbin Reservoir to Wachusett Mountain (Q2W), Greater Hubbardston area (Worcester County), Massachusetts

FUNDING HISTORY

<i>Forest Legacy Program FY 2013 Funding</i>	<i>\$ 5,940,000</i>
<i>FY 2013 Non-Federal Cost Share</i>	<i>\$ 2,435,000</i>
<i>FY 2013 Project Costs</i>	<i>\$ 8,375,000</i>
<i>FY 2013 Project Acres</i>	<i>3,275</i>
<i>Forest Legacy Funding to Date</i>	<i>\$ 0</i>
<i>Total Project Costs</i>	<i>\$ 8,375,000</i>
<i>Total Project Acres</i>	<i>3,275</i>



"Q2W" Forest Legacy Application

Involvement

- 23 Landowners
- 7 Towns
- 4 Land Trusts
- 1 Watershed Group
- 1 State Agency (DCR)

Primarily CRs/WPRs

Exemplary benefits: economic, biodiversity, water supply protection, recreation



Highest Threat Level for Conversion to Residential Development



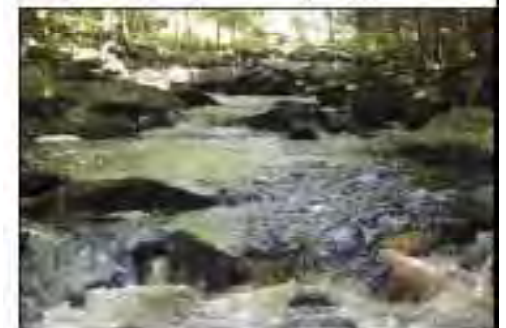
Outstanding Recreational Resource:
Hiking, Hunting and Fishing



Creating a 20 mile Conservation Corridor
Linking 50,000 acres of Forests:
View of Mount Wachusett, Tract 10



Highest Priority Working Forests in MA



Exceptional Water Supply for
2.5 Million People

DWSP's Watershed Preservation Restriction Program

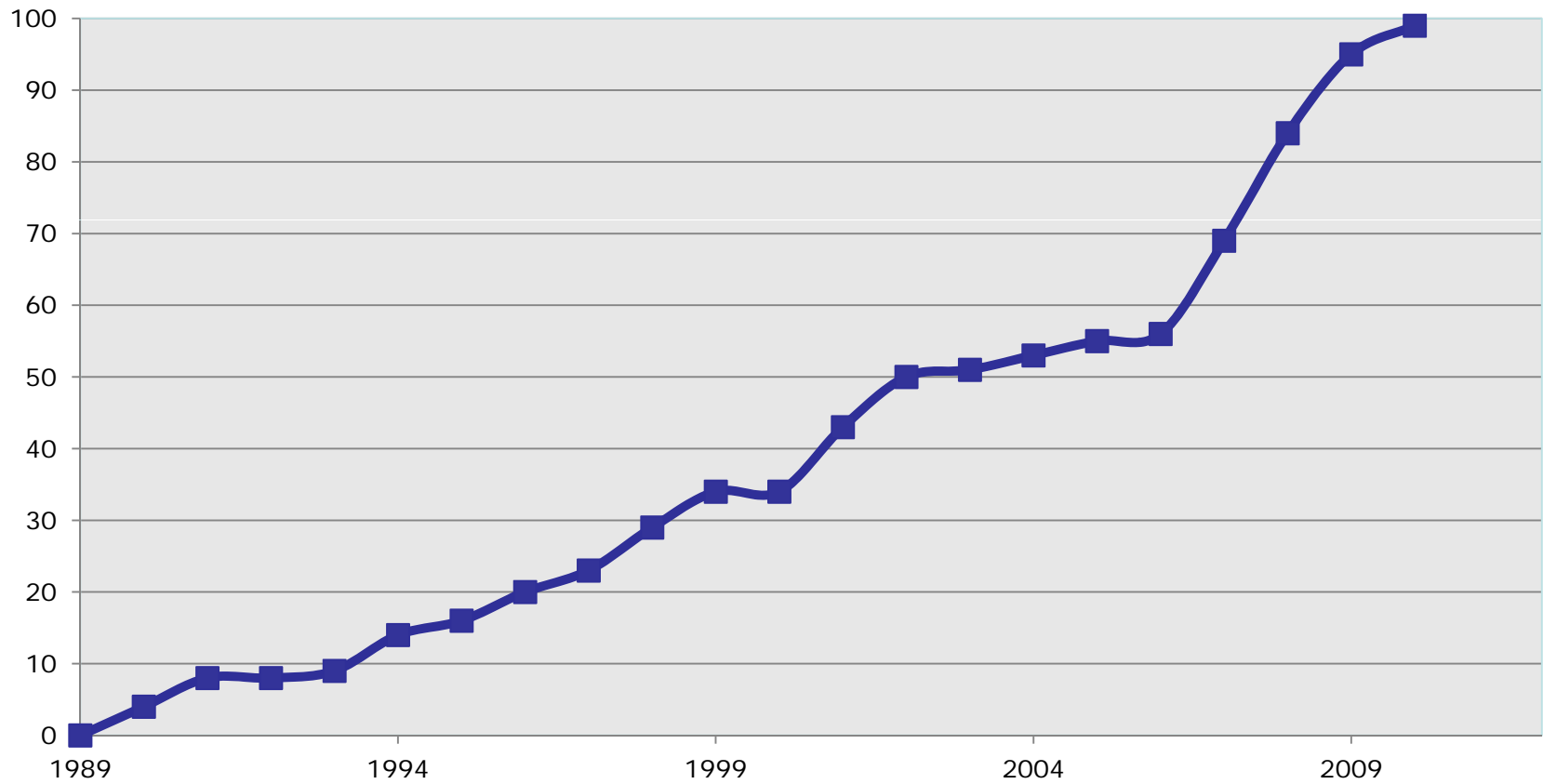
- Voluntary agreement between landowner and the Division.
- Landowner gives up certain rights to his or her land.
- Rights are permanently removed from the property, even when it is subsequently sold.
- Defined in M.G.L. Chapter 184 Section 31.

WPR Program

- Statute also defines the Conservation Restriction, which is a similar and more commonly used legal tool.
- In other states, Restrictions are called Conservation Easements.
- To avoid confusion, throughout this presentation, the Division's Watershed Preservation Restrictions will be referred to as WPRs, and Conservation Restrictions or Conservation Easements held by others will be called Restrictions.

WPR Program

Total Number of WPRs



WPR Program – Landowner’s Perspective

Why a Landowner Would Prefer a WPR

- Can continue to own their land.
- Can continue allowed activities on their land (i.e. passive recreation, hunting, forestry).
- Eligible for tax incentives for donating Restrictions (if they wish to donate the Restriction).
- Pay reduced property taxes.

Why a Landowner Would Prefer to Sell Land in Fee to the Division

- Do not wish to have any ownership responsibilities.
- Receive more money for sale of land in fee.

WPR Program – DWSP's Perspective

Why the Division Would Prefer to Acquire a WPR

- WPRs cost less than acquiring land in fee.
- WPRs do not incur Payment in Lieu of Taxes (PILOT) obligations.
- WPRs do not require active land management required of fee lands (i.e. road maintenance, forest management, control of public access). However, they do still require stewardship.

Why the Division Would Prefer to Acquire Land in Fee

- When complete control of the land is required, fee ownership is necessary.

WPR Program – Restrictions Basics

Each WPR is negotiated separately and the language within it varies based on the landowner's requirements and the Division's site-specific requirements. WPR language has also evolved over time. The current WPR Template prohibits activities that can harm water quality, such as:

- construction of buildings, structures, roads, or paths;
- excavation; storage or use of hazardous materials;
- grazing or sheltering of livestock or animals;
- motorized vehicle use, unless required for land management purposes.

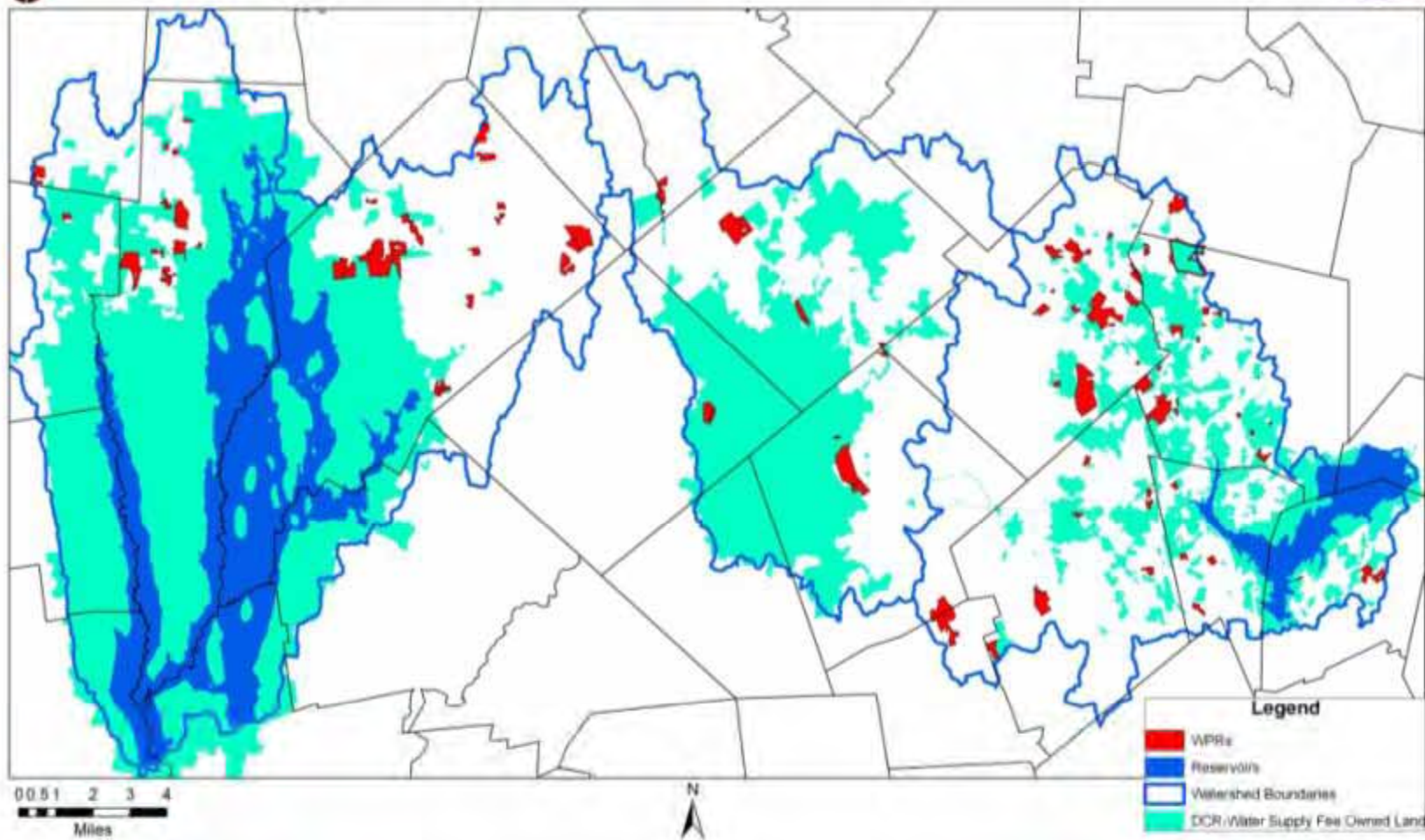
Landowners can still use their land for passive recreation and timber harvesting (in compliance with the Massachusetts Forest Cutting Practices Act).



WPR Program – Mapped



DCR - Water Supply Watershed Preservation Restrictions



WPR Program – Stewardship Basics

- Baseline Documentation Reports
 - Photos, maps, narrative
 - Conditions at time of closing
- Monitoring
 - Semi-annually
 - On-the-ground; restrictions are being upheld
- Landowner relations
 - Working relationships
 - When land changes hands
- Enforcement

WPR Program – Baseline Report

A Baseline Documentation Report (“baseline”) consists of

- Photos
- Maps
- Narrative

which portray the condition of the restricted property *relative to the terms of the CR*.

The purpose of the baseline is to provide a baseline from which future changes to the property can be measured.

WPR Program – Monitoring

- On-the-ground monitoring consist of making contact with the landowner and walking the property to make sure the provisions of the WPR are being upheld.
- Regular monitoring reduces the chances that WPRs will be violated, and increases the chances of correcting a violation if one does occur.

WPR Program – Landowner Relations

- Maintaining good working relationships with landowners is the easiest way to prevent violations.
- The most important time to reach out to landowners is when the land changes hands.

WPR Program – Stewardship 2005-09

- The pace of WPR acquisition increased dramatically.
- Staffing for the WPR stewardship program inadequate and not focused.
- Resulted in an increasing stewardship backlog:
 - Baseline report production did not keep up with WPR acquisition.
 - WPRs monitored infrequently.
 - Violations went undiscovered.
 - Landowners did not know who to contact.

WPR Program – Stewardship 2009 to Present

- In 2009, a Watershed Preservation Restriction Coordinator was hired to oversee WPR stewardship in the three watersheds.
- The Division began addressing the backlog of stewardship activities, as well as revising our procedures in light of best practices that had been developed since 2005.
- Massive progress made on baselines, monitoring (now every two years), landowner relations and enforcement

WPR Program – Context with Others

Agency/Division	Number of Restrictions	Dedicated Stewardship Staff
DCR – Division of Water Supply Protection	~100	1
DCR – Division of State and Urban Parks	~300	0
Fisheries and Wildlife	~200	½
Agricultural Resources	~800	1

- The other Divisions and Agencies use contractors to carry out some of their stewardship duties, but others are left undone.
- The other Divisions and Agencies look to the WPR program as a model of how Restriction Stewardship can be accomplished with adequate staffing.

WPR Program

Fever Brook
Acquisition,
Petersham-
Quabbin
Watershed





Watershed Outreach

Downstream produced every spring and winter for the past 13 years! Evolved from large landowner outreach to reach all residents in the watershed system, focusing on general environmental issues with spotlights on DCR activities.

Watershed Currents

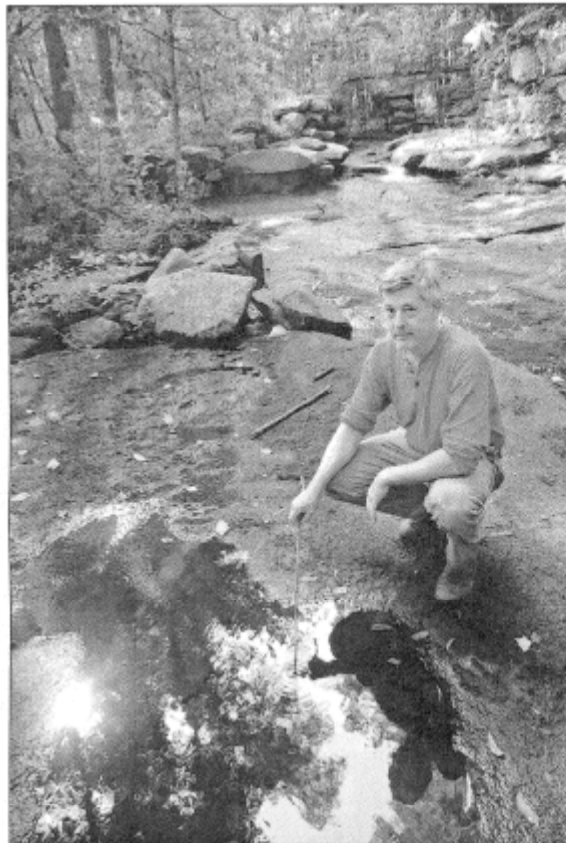
New bi-annual publication targeted to Watershed Preservation Restriction (WPR) holders.



T&G: "Clean Water for Millions"

Clean water for millions

By Bradford L. Miner
TELEGRAM & GAZETTE STAFF



T&G Staff/PAUL KAPTEYN

James M. French, land acquisition coordinator for the state Division of Water Supply Protection, kneels at Keyes Brook in Keyes Brook Gorge in Princeton, where 10 acres were purchased for protection in the Wachusett Reservoir watershed.

If Quabbin Reservoir water looks good enough to drink as it thunders over the spillway and down into the granite gorge of the Swift River, imagine how good it is when it comes from a faucet in Boston, 60 miles to the east—or a tap in Marlboro, Northboro, Southboro and Clinton for that matter. A blind taste test a month ago on NBC's "Today Show" confirmed what countless people among 2.4 million greater metropolitan Boston water users already know—their tap water is among the best provided by major cities across the country.

Wachusett, Quabbin were planned well

Wine tasting experts David Lynch and Joe Bastianich described Boston's water to "Today" co-hosts Meredith Vieira and Matt Lauer as "very crisp and appealing," and "a purity that's straight down the middle."

Second to Salt Lake City, Boston's water was judged to be better than that of Cleveland, Columbia, S.C., Miami, Chicago, St. Louis, Memphis, Tenn., Dallas, Portland, Ore., San

Turn to Wachusett/ Page B4

Quenching Boston's thirst

Reservoirs and rivers from which the Massachusetts Water Resources Authority provides wholesale water and sewer services

People served: 2.5 million in 890,000 households

Businesses served: 5,500

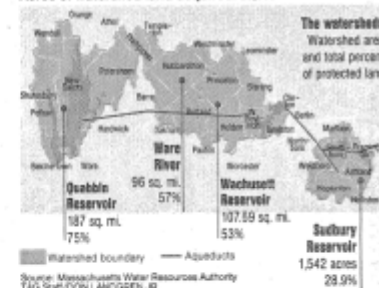
Communities served: 61 in metropolitan Boston

Area communities that receive some or all water from MWRA: Clinton, Marlboro, Northboro, Southboro

Avg. gallons/day water supplied: 215 million

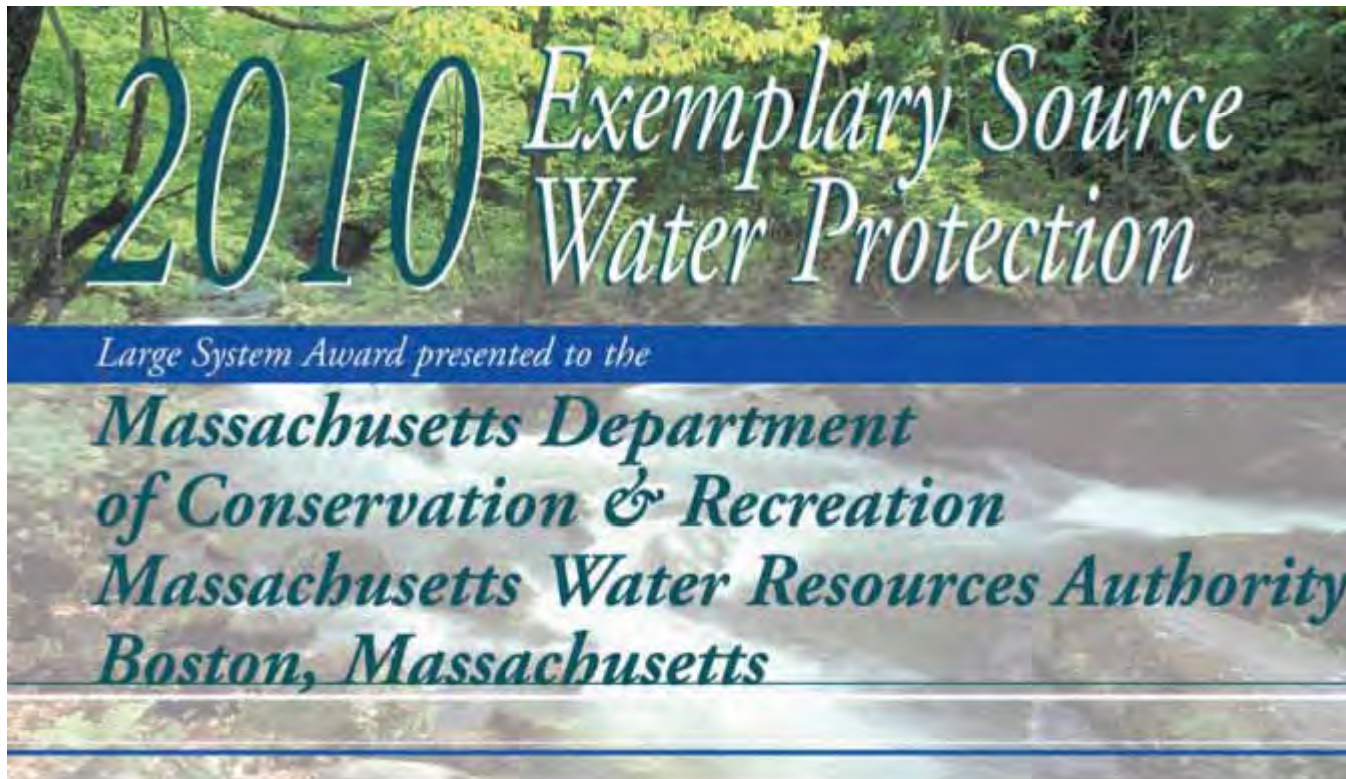
Avg. gallons/day sewage treated: 350 million

Acres of watershed land acquired: 20,000



Source: Massachusetts Water Resources Authority
T&G Staff/CON LANGRISH JR.

National Award



American Water Works
Association

The National Resource for Safe Water

L.P. Will
President

